DEALER SERVICE SHOP COPY

85 Series Folding Row-Crop Cultivator

JOHN DEERE

OPERATOR'S MANUAL

Des Moines Works
OM-N159483 Issue J8
LITHO IN U.S.A.

To the Purchaser

This new cultivator was carefully designed and manufactured to give years of dependable service. To keep it running efficiently, read the instructions in this operator's manual. Each section is clearly identified so you can easily find the information you need—whether it is operation, lubrication, or adjustments. Read the Table of Contents to learn where each section is located.

In addition to the equipment furnished with your cultivator, attachments are available to help you do a better job in special crop conditions. These are described in the attachments section of this manual and can be purchased from your John Deere dealer.

"Right-hand" and "left-hand" sides are determined by facing in the direction the cultivator will travel when in field use.

Record your cultivator serial number in the space provided on page 69. Your dealer needs this information to give you prompt, efficient service when you order parts or attachments. If your cultivator requires replacement parts, go to your John Deere dealer where you can obtain genuine John Deere parts—accept no substitutes.

The warranty on this cultivator appears on your copy of the purchase order which you should have received from your dealer when you purchased the cultivator.

This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

Your operator's manual contains SI Metric Equivalents which follow immediately after the U.S. customary units of measurement.

85 SERIES FOLDING ROW-CROP CULTIVATOR

PREDELIVERY CHECK LIST

☐ Row spacing of rigs is correct for row widths to be cultivated. See pages 16 through 27.

☐ Rigs have been lubricated and work freely. See page 38.

☐ Attachments ordered with cultivator are properly installed.

☐ Clamps, shanks and crossarms positioned in correct location. See pages 16 through 27.

Signed .....

Date .....

DELIVERY CHECK LIST

At the time of delivery, important information should be conveyed directly to the customer. Check off each item below as it is fully explained to the customer.

☐ Advise the customer to lubricate the machine as directed in the operator's manual.

☐ Give the operator's manual to the customer and explain all operating adjustment to him.

☐ Review with the customer the safety instructions in the operator's manual which he must observe when using this machine.

☐ When cultivator is transported on a road or highway at night or during the day, accessory lights and devices should be used for adequate warning to operators of other vehicles. In this regard, tell customer to check local governmental regulations.

Signed .....

Date .....

CUT HERE

OWNER REGISTER

Cultivator Model. . . . . .
Serial No. . . . . .
Name . . . . . .
R.R. No. . . . . .
Post Office . . . . . .
Sate . . . . . Zip. . . . . .

AFTER-SALE CHECK LIST

The following is a suggested list of items to be checked at a dealer-customer mutually agreeable time during the first operating season.

☐ Check with the customer as to the performance of the cultivator. Make certain he understands the proper operating adjustments for his crop (or soil condition).

☐ If possible, operate the cultivator to see that it is functioning properly.

☐ Acquaint the customer with any special attachment which will help him to do a better job.

☐ Go over entire cultivator for loose or missing bolts.

☐ Check for broken or damaged parts.

☐ Check with the customer to ascertain if the recommended periodic lubrication has been performed.

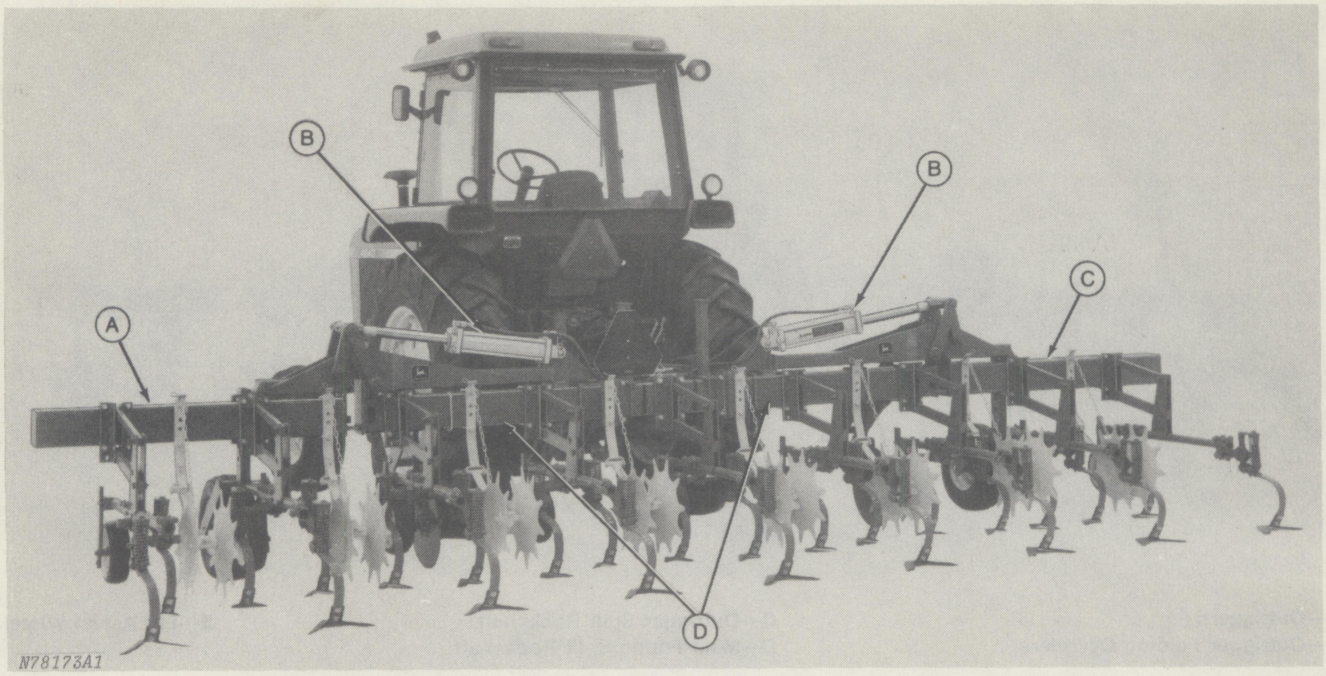
☐ Review the operator's manual with the customer and stress the importance of proper lubrication and safety precautions.

Signed .....

Date .....

Contents

CONTENTS—Continued

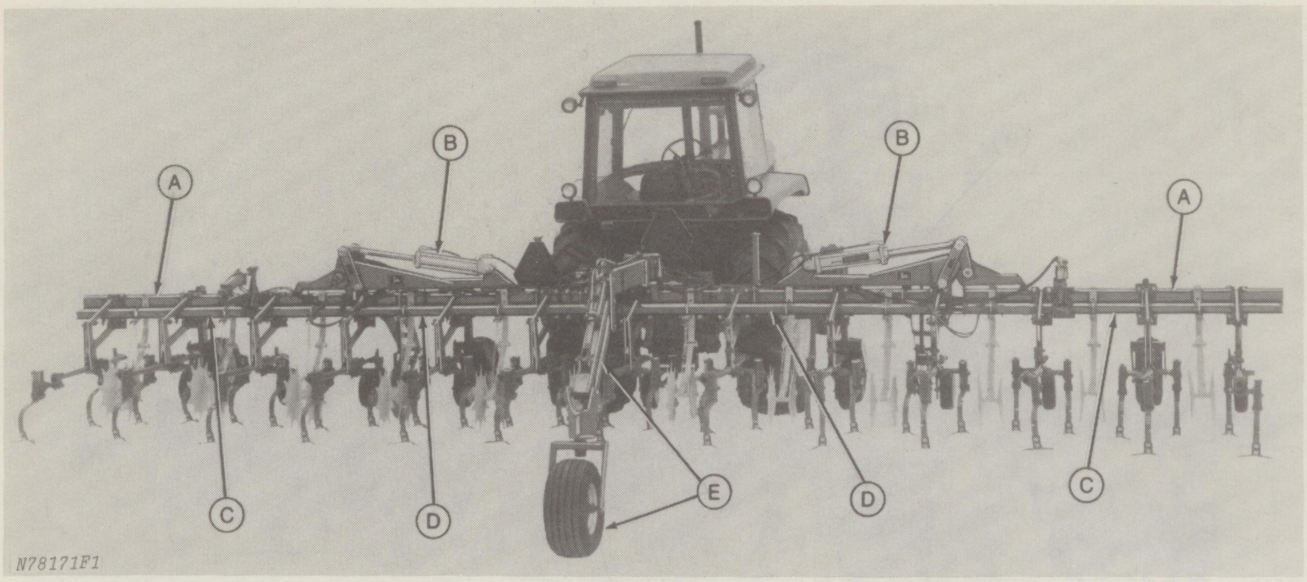


A—Left-Hand Outrigger **B—Outrigger Folding Cylinders** **C—Right-Hand Outrigger** **D—Center Frame**

85 Series 8-Row Rear Mounted Folding Cultivator—Outriggers Lowered

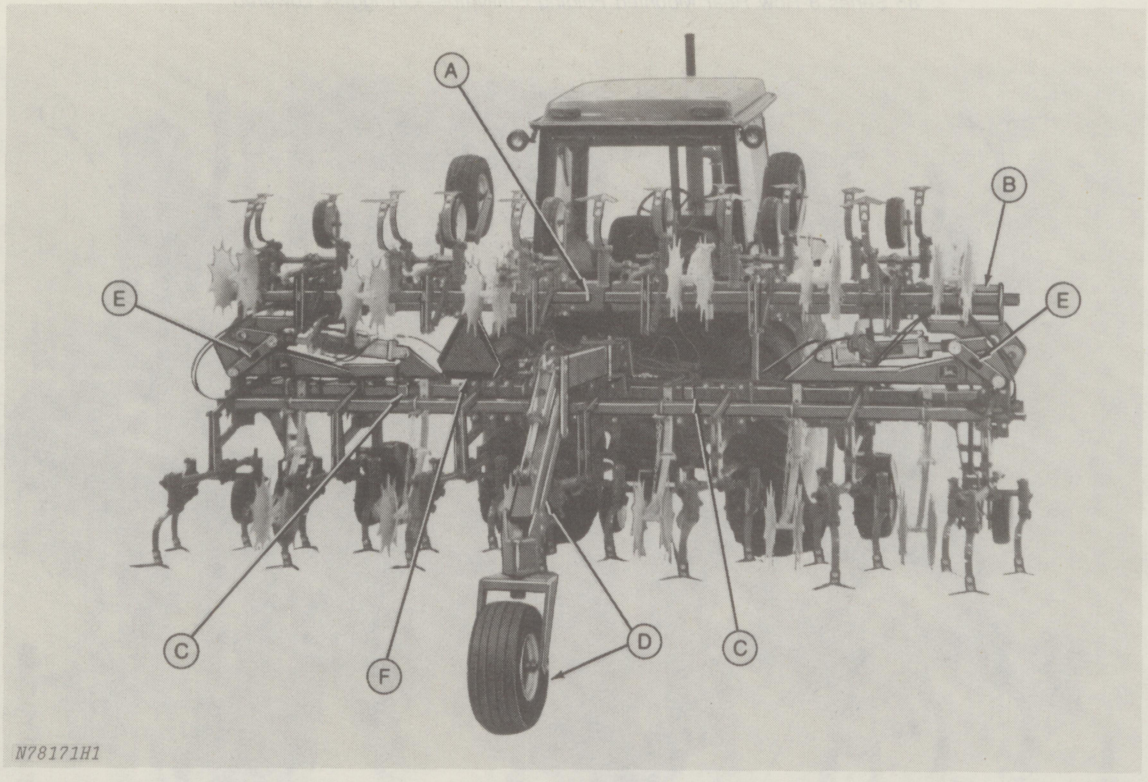
A—Left-Hand Outrigger **B—Right-Hand Outrigger** **C—Center Frame**

85 Series 8-Row Rear Mounted Folding Cultivator—Outriggers in Transport



A—Outriggers
B—Outrigger Folding Cylinders
C—Outrigger Split Rockshaft
D—Main Frame Split Rockshaft
E—Lift Assist Wheel

85 Series 12-Row Rear Mounted Folding Cultivator With Lift Assist Wheel and Split Rockshaft—Outriggers Lowered



A—Left-Hand Outrigger
B—Right-Hand Outrigger
C—Main Frame
D—Lift Assist Wheel
E—Red Reflector
F—SMV Emblem

85 Series 12-Row Rear Mounted Folding Cultivator With Lift Assist Wheel and Split Rockshaft—Outriggers in Transport

Safety Suggestions

Operate Safely

Do not operate cultivator without reading this operator's manual.

Do not allow anyone to ride on the cultivator.

Have the cultivator stationary and on level ground when raising or lowering outriggers.

Do not raise or lower the outriggers when moving.

Always shut off tractor engine when leaving tractor unattended.

Lower the cultivator when not in use.

Do not operate close to a ditch or creek.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Hearing protective devices (such as ear muffs or plugs) can effectively protect against loud noises.

When you are exposed to noise which is objectionable or uncomfortable, it is recommended that you wear a suitable hearing protective device.

Slow down when turning.

Drive slowly over rough ground.

Apply both tractor brakes evenly when making emergency stops. Plan ahead.

Wear relatively tight and belted clothing to prevent being caught on some part of the machine.

Avoid Fires

Do not refuel with the tractor engine running.

Do not smoke or use a lantern when refueling.

Transport Safely

Latch the tractor brakes together when transporting.

Shift the tractor into a lower gear when transporting down steep slopes or hills.

Keep the SMV emblem and reflectors clean and visible from the rear.

Stop slowly.

When transporting the cultivator on a road or highway at night or during the day, use accessory lights and devices for adequate warning to operators of other vehicles. In this regard, check local governmental regulations. Various safety lights and devices are available from your John Deere dealer.

Practice Safe Maintenance

Do not lubricate, adjust, or clean the cultivator while it is in motion.

Shut off engine and remove key when working on cultivator.

Replace any guards and shields removed for servicing.

When mounting a tire on a wheel or rim, failure to follow proper procedure can produce an explosion which can result in serious injury or death. Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Have it done by your John Deere dealer or a qualified tire repair service.

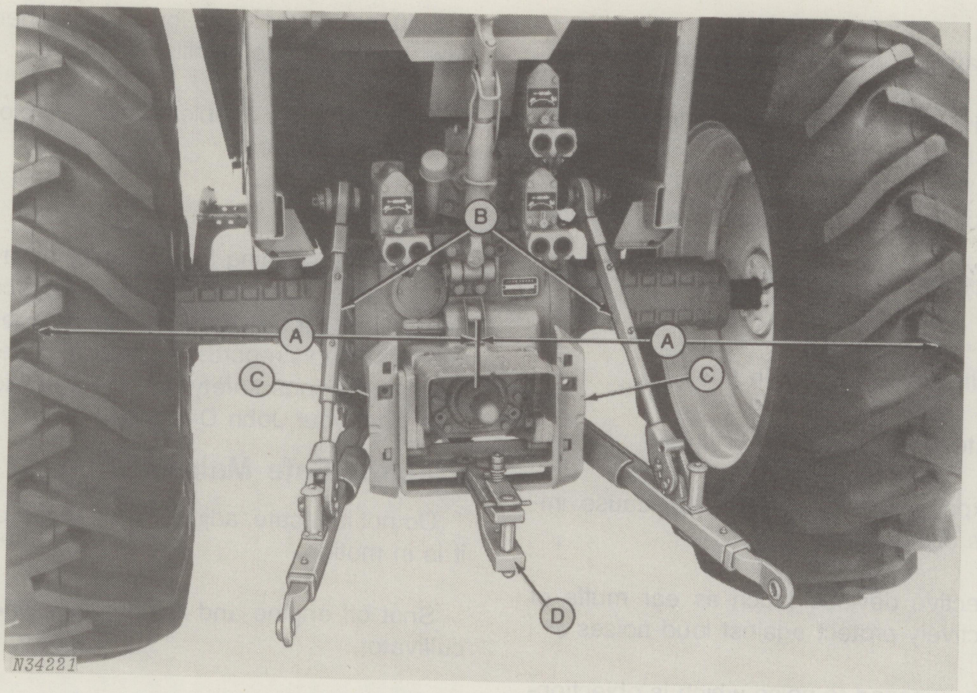
Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged.

Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

Preparing For Use

PREPARING THE TRACTOR



A—Dimension B—Lift Links C—Sway Block D—Drawbar

Wheel Spacing

Set the tractor wheels for the desired row spacing so the wheels are centered between the rows. The dimension "A" from the center of the tractor to the center of each tire should be the same.

Tire Inflation

See your tractor operator's manual for correct tire inflation pressures and instructions for wheel ballast where required.

Sway Blocks

Place the sway blocks (C) in the upper wide setting as illustrated, to prevent cultivator side sway during transport. See your tractor operator's manual.

Drawbar Position

Place the drawbar (D) in the short position to provide maximum clearance between rear of drawbar and cultivator.

Lift Links

Adjust length of lift links (B) to minimum length, being sure to maintain adequate clearance between tractor tires and toolbar cultivator components. See your tractor operator's manual.

Lift Link Lateral Float Adjustment

If frame gauge wheels are used, adjust lift link pins to allow lateral float.

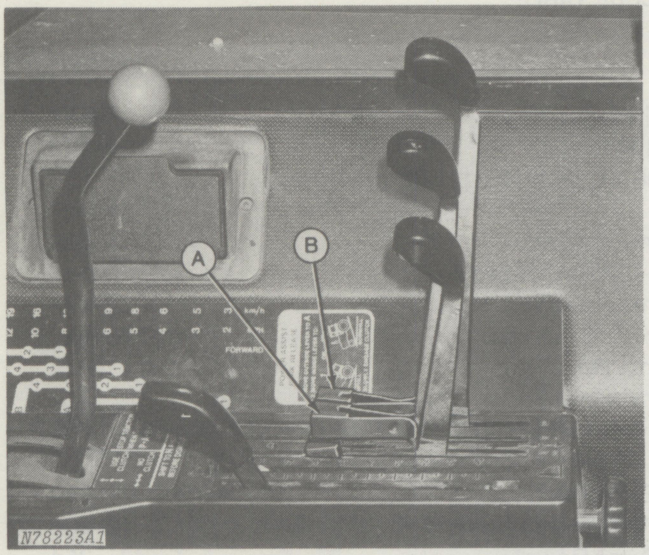
If frame gauge wheels are not used, adjust lift link pins to prevent lateral float, as illustrated above.

See your tractor operator's manual.

Rockshaft Selector Lever

Place rockshaft selector lever in the MIN, ZERO, or D position.

Rockshaft Control and Remote Cylinder Operation



Install clip at (A) for cultivators with split rockshaft.

Install clips at (A) and (B) for cultivators with lift assist wheel and split rockshaft. The lever for clip (B) controls split rockshaft.

See pages 14-15 for field operation.

Tractor Rockshaft Cover

Be sure tractor rockshaft cover is as shown on pages 55-57.

BALLAST INFORMATION

Tractor front end stability is necessary for safe and efficient operation. Install the proper amount of weight on the front of the tractor as recommended in your tractor operator's manual.

NOTE: Ballast recommendations provide for adequate transport stability at recommended speeds. Additional front ballast may be required for satisfactory field operation due to sudden or extreme forces on the tractor hitch, which may occur when removing the cultivator from the ground and turning at row ends, or during field transport over very rough ground.

Addition of integral sprayers (spray tanks and frame) provides additional weight which will offset some of the recommended front ballast.

Instructions

Step I—Find your cultivator model in the table on next page and enter its Implement Code on Line 1 below.

Step II—Enter an Implement Code for each attachment or option used on your cultivator, on Line 2 below.

Step III—Add Implement Code of cultivator and Implement Code(s) for each attachment used to obtain the Total Implement Code.

Step IV—Refer to tractor operator's manual to determine required tractor front ballast.

IMPORTANT: Refer to tractor operator's manual: 1. If the total implement code exceeds the maximum implement code listed for a particular tractor model, the implement-attachment combination is not recommended for that tractor. 2. The total load on any tractor wheel due to the weight of the implement-attachment combination and tractor equipment, should not exceed the carrying capacity of the tractor tires. See your tractor operator's manual.

Line 1 _____

Line 2 _____

_____

_____

_____

_____

_____

Total Implement Code _____

BALLAST INFORMATION—Continued

IMPLEMENT CODE TABLE

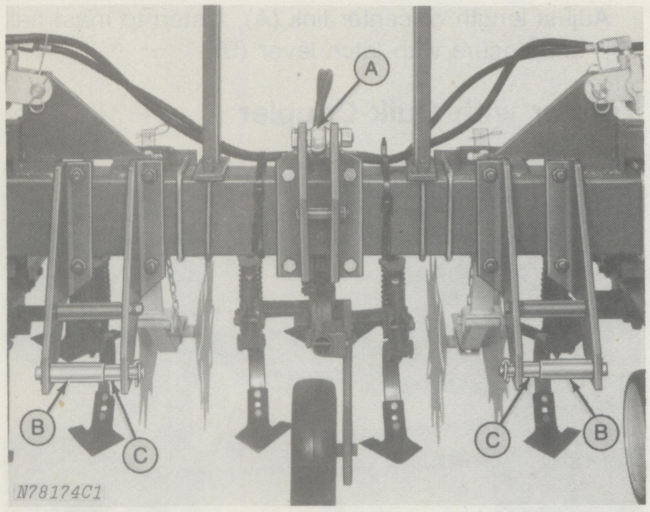
Cultivator Model	Implement Code
85 Six-Row Sweep Cultivator (36-40 Inch [0.91-1.02 m] Rows)	191
85 Six-Row S-Tine Cultivator (34-40 Inch [0.86-1.02 m] Rows)	140
85 Six-Row Single-Rig, Five-Shank Sweep Cultivator (36-40 Inch [0.91-1.02 m] Rows)	170
85 Eight-Row Sweep Cultivator (28-30 Inch [0.71-0.76 m] Rows)	166
85 Eight-Row Beet & Bean Cultivator (28-30 Inch [0.71-0.76 m] Rows)	163
85 Eight-Row S-Tine Cultivator (28-32 Inch [0.71-0.81 m] Rows)	174
85 Eight-Row Sweep Cultivator (36-40 Inch [0.91-1.02 m] Rows)	256
85 Eight-Row S-Tine Cultivator (34-40 Inch [0.86-1.02 m] Rows)	202
85 Eight-Row Single-Rig, Five-Shank Sweep Cultivator (36-40 Inch [0.91-1.02 m] Rows)	236
85 Twelve-Row Sweep Cultivator (28-30 Inch [0.71-0.76 m] Rows)	238
85 Twelve-Row Beet & Bean Cultivator (28-30 Inch [0.71-0.76 m] Rows)	238
85 Twelve-Row S-Tine Cultivator (28-30 Inch [0.71-0.76 m] Rows)	254
85 Twelve-Row Sweep Cultivator (36-40 Inch [0.91-1.02 m] Rows)	367
85 Twelve-Row S-Tine Cultivator (34-40 Inch [0.86-1.02 m] Rows)	282
85 Twelve-Row Single-Rig, Five-Shank Sweep Cultivator (36-40 Inch [0.91-1.02 m] Rows)	317
85 Sixteen-Row Sweep Cultivator (28-30 Inch [0.71-0.76 m] Rows)	313
85 Sixteen-Row Beet & Bean Cultivator (28-30 Inch [0.71-0.76 m] Rows)	321
85 Sixteen-Row S-Tine Cultivator (28-30 Inch [0.71-0.76 m] Rows)	329
Attachments or Options	
Gauge Wheels (Each Wheel)	4
Coulters (Each Coulter Other Than Regular Coulters)	4
Rolling Shields (Per Row)	2
Other Shields (Per Row)	2
Split Rockshaft Lift:	
85 Eight-Row Cultivator (34-40 Inch [0.86-1.02 m] Rows)	23
85 Twelve-Row Cultivator (28-30 Inch [0.51-0.76 m] Rows)	25
85 Twelve-Row Cultivator (36-40 Inch [0.91-1.02 m] Rows)	33
85 Sixteen-Row Cultivator (28-30 Inch [0.71-0.76 m] Rows)	33

PREPARING CULTIVATOR

Hitch Pins and Spacers-21, 28 and 31-Foot (6 401, 8 534, and 9 449 mm) Cultivators

CAUTION: Before attaching cultivator to tractor, be sure hitch pins and spacers are completely assembled to match the hitch configuration of your tractor.

Category 2 Without Quik-Coupler



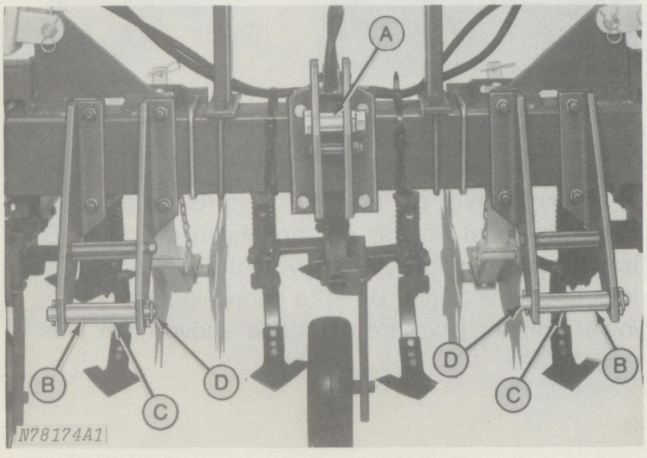
A—Mast Ball **B—Sleeve** **C—Hitch Pin**

Remove short spacers from hitch pins (C) and place sleeves (B) in outer position.

21-Foot (6 401 mm) Cultivator: Bolt the mast ball (A) in place with bolt and spacer.

28 and 31-Foot (8 534 and 9 449 mm) Cultivators: Pin mast ball in place with pin and cotter pins.

Category 2 With Quik-Coupler



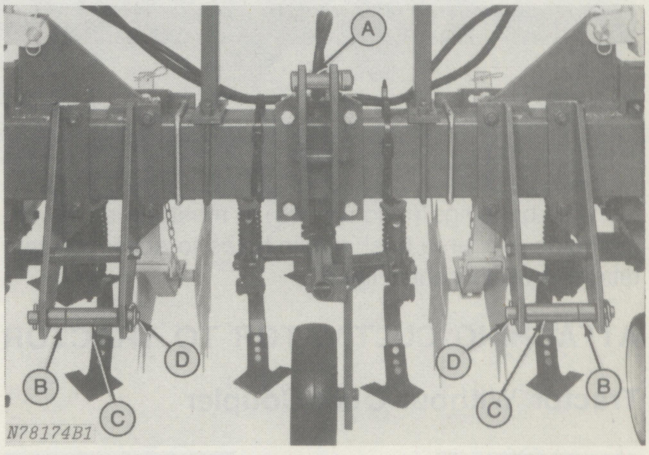
A—Mast Spacer **B—Spacer** **C—Sleeve** **D—Hitch Pin**

Move sleeve (C) to inner position and place spacer (B) in outer position on hitch pins (D).

21-Foot (6 401 mm) Cultivator: Place bolt and spacer (A) in lower hole of mast.

28 and 31-Foot (8 534 and 9 449 mm) Cultivator: Place pin in lower hole and hold in place with cotter pins.

Category 3 With Quik-Coupler



A—Mast Spacer **B—Spacer** **C—Sleeve** **D—Hitch Pin**

Move sleeve (C) to inner position and place spacer (B) in outer position on hitch pins (D).

21-Foot (6 401 mm) Cultivator: Place bolt and spacer (A) in upper hole of mast.

28 and 31-Foot (8 534 and 9 449 mm) Cultivators: Place pin in upper hole and hold in place with cotter pins.

Mast and Hitch Pins-41-Foot (12 497 mm) Cultivator

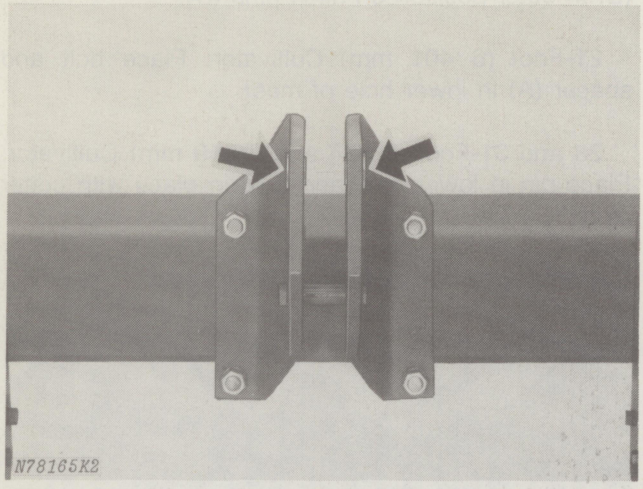
Hitch pins do not require sleeves and spacers.

Category 2 with Quik-Coupler-Place pin in lower hole of mast.

Category 3 with Quik-Coupler-Place pin in upper hole of mast.

IMPORTANT: Torque 1-1/8-inch jam nuts on hitch pins to 450 ft-lbs (610 Nm [62 kgm]).

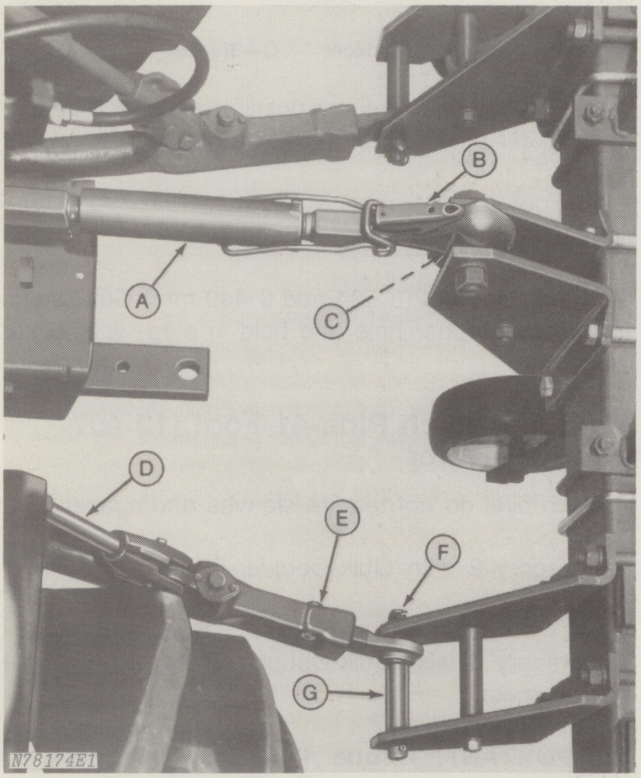
Tractor Center Link Adapters—For Category 2 Hitch with Enclosed Center Link Ball Without Quik-Coupler



Place bushings (bold arrows) in mast upper attaching holes. Reverse bushings in holes to accommodate different width center links.

ATTACHING CULTIVATOR TO TRACTOR

Tractor Without Quik-Coupler



A—Center Link
B—Latch Lever
C—Mast Ball
D—Lift Link
E—Draft Links
F—Hitch Pin
G—Sleeve

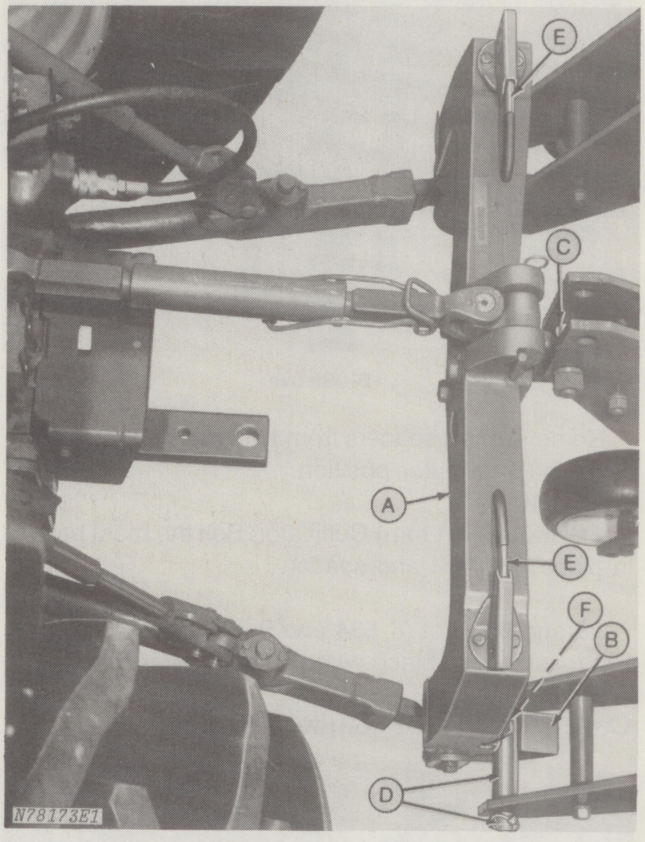
⚠ CAUTION: Before attaching cultivator to tractor, be sure hitch pins (F) and sleeves (G) are completely assembled to match the hitch configuration of your tractor. See pages 9 and 10.

Back tractor and position draft links (E) in front of and in line with hitch pins. Stop engine and set brakes.

Extend draft links and adjust length of lift links (D) to enable installation of hitch pins. Install pins and secure with Quik-Lock pins.

Adjust length of center link (A), fasten to mast ball (C), and secure with latch lever (B).

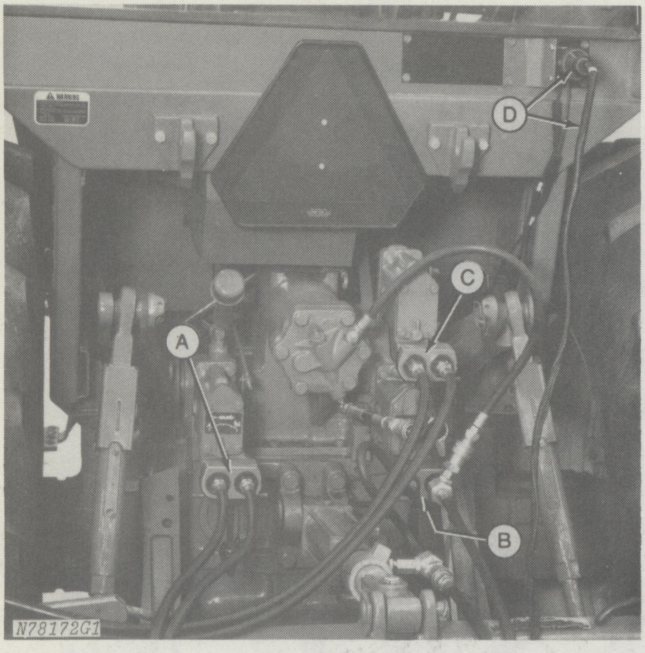
Tractor with Quik-Coupler



A—Quik-Coupler
B—Jaw
C—Mast Spacer
D—Hitch Pin
E—Latch Levers
F—Latch

Lower coupler (A) to allow jaws (B) to pass under cultivator mast spacer (C) and hitch pins (D). Back tractor, raise coupler to firmly seat coupler jaws, then lock latch levers (E). Be sure spring-loaded latches in lower coupler jaws are extended above hitch pins.

Hydraulic Hoses and Electric Solenoid Valves



A—No. 1 Outlet
B—No. 2 Outlet
C—No. 3 Outlet
D—Electrical Outlet

For cultivator hydraulic functions use the outlets as shown. Plug the hydraulic couplers with groove in tractor receptacle with notch.

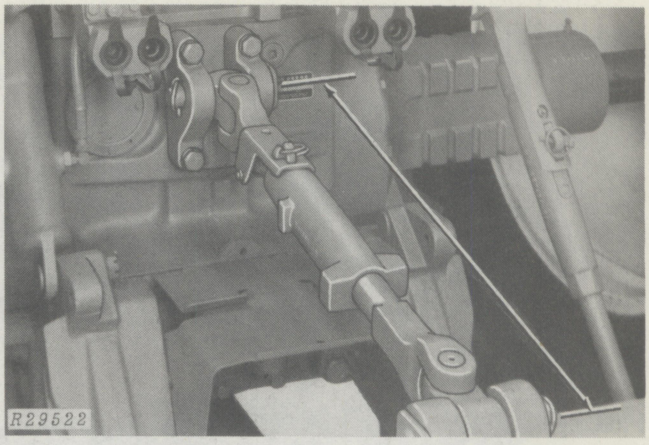
No. 1 Outlet (A)	Outrigger Folding
No. 2 Outlet (B)	Lift-Assist Wheel
No. 3 Outlet (C)	Split Rockshaft
Outlet (D)	Electrical Outlet for Split Rockshaft Solenoids

⚠ CAUTION: Escaping hydraulic fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes, and hoses are not damaged.

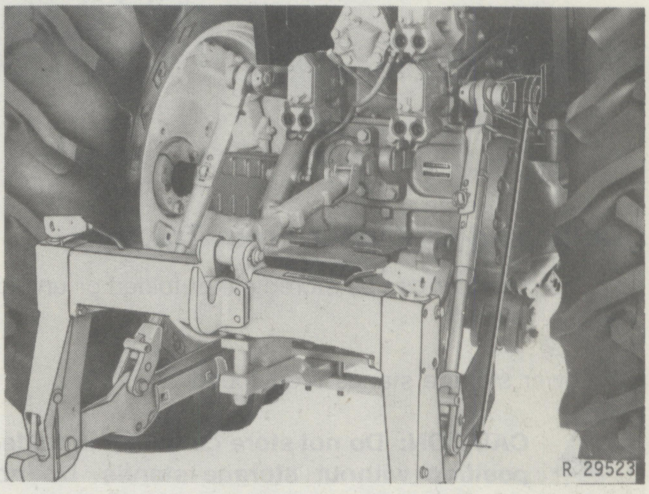
Hydraulic fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping hydraulic fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

LEVELING CULTIVATOR FRAME

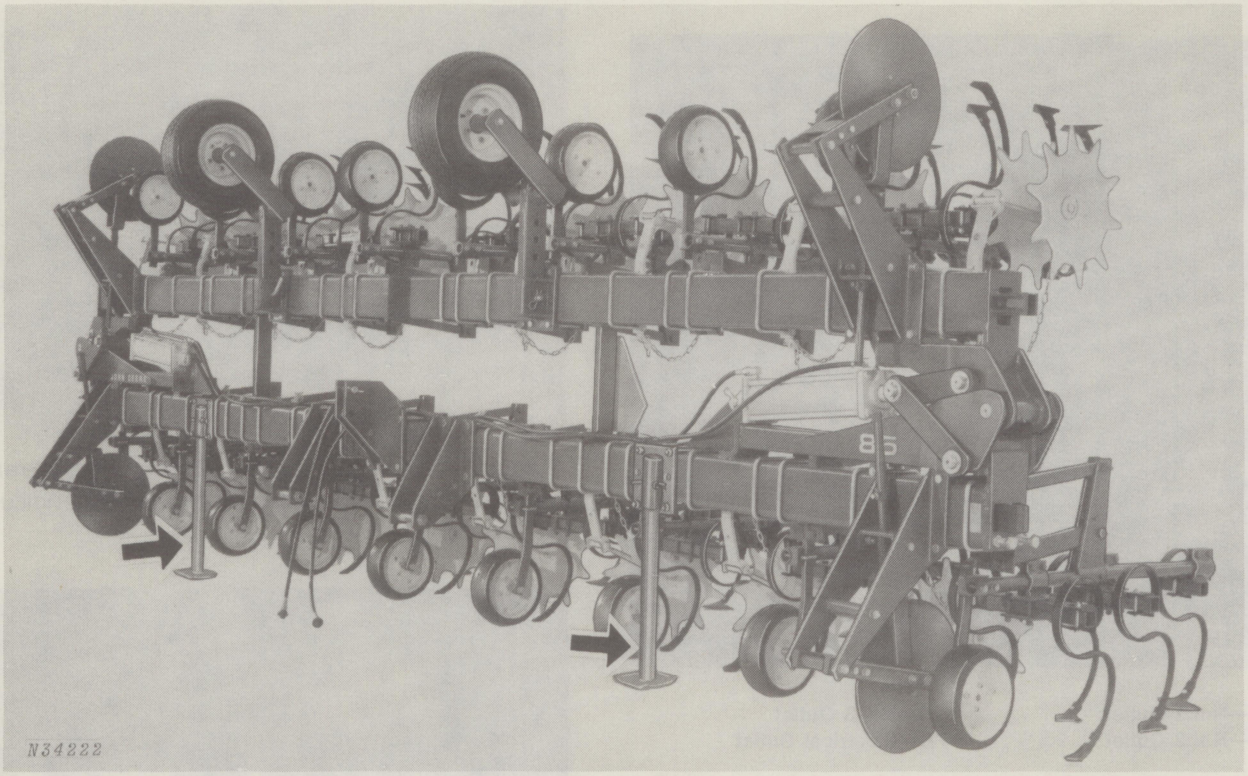


Adjust center link to level cultivator front-to-rear, or to make front face of cultivator frame perpendicular to the ground.



Adjust lift link to level cultivator frame. Check frame height and adjust depth stop for control lever or adjust frame gauge wheels, see pages 14 and 15.

STORAGE



Detaching Cultivator From Tractor

The cultivator can be stored either folded or unfolded.

Lower storage stands if equipped.

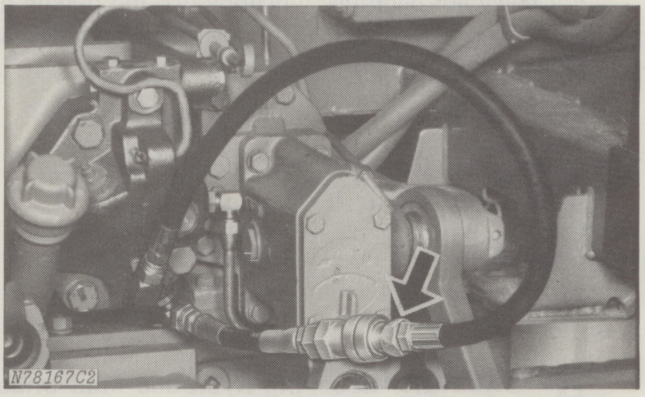
CAUTION: Do not store cultivator in folded position without storage stands. Do not unhitch folded machine unless stands are in position.

Lower cultivator onto a firm level surface. Loosen center link as necessary to remove load from hitch.

Release center link latch lever and disconnect center link, remove hitch pins (without Quik-Coupler) or release Quik-Coupler latches.

CAUTION: Serious personal injury can result if you attempt to disconnect hydraulic hoses under pressure. Shut off tractor engine and work levers back and forth before disconnecting.

Disconnect the hydraulic hoses. Install dust plugs over the hose plugs and in the tractor outlets.



If cultivator is equipped with lift-assist wheel attachment, connect the hoses as shown (bold arrow).

IMPORTANT: Failure to connect this hose when separated from cultivator may cause tractor damage if the 3-point hitch is raised.

Storage

Clean and store cultivator in a dry place.

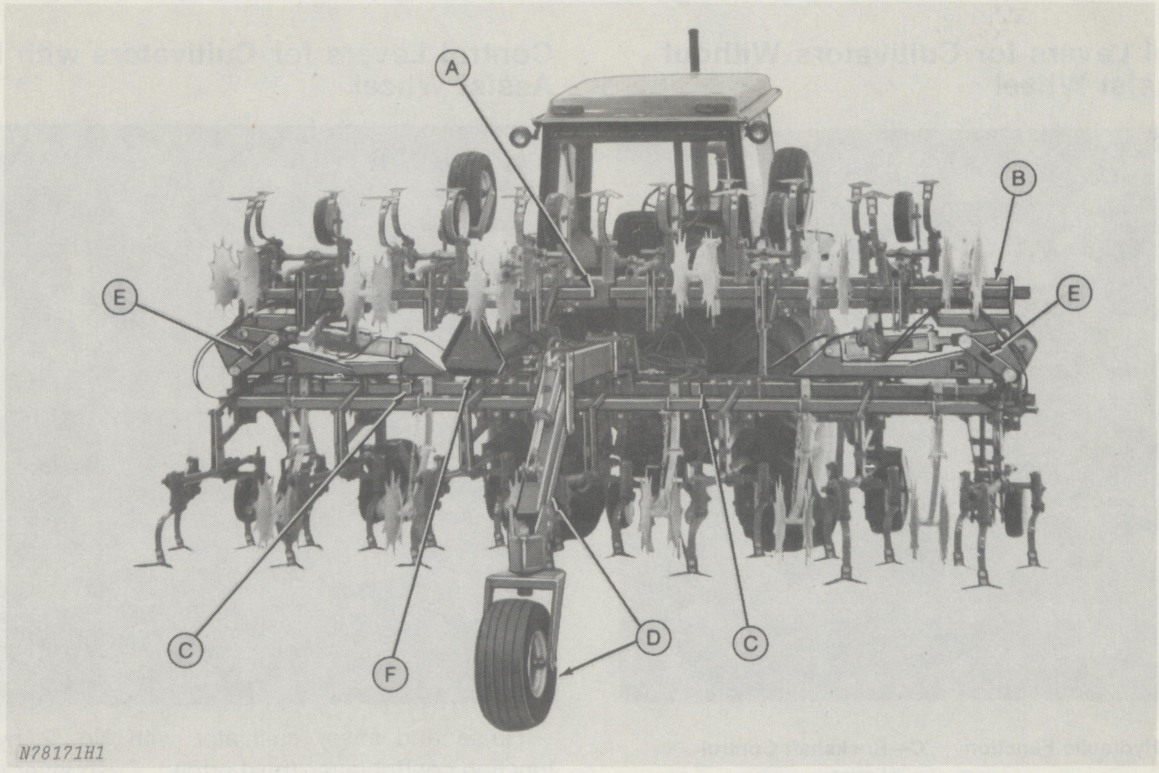
Lubricate as indicated on page 37.

Inspect for damaged parts and replace before next season.

Paint areas from which paint has been worn.

Clean sweeps and shovels and apply a rust preventive, such as John Deere Soft Black Coating, or grease.

Transporting



A—Left-Hand Outrigger
B—Right-Hand Outrigger
C—Main Frame
D—Lift Assist Wheel
E—Red Reflector
F—SMV Emblem

Raise the cultivator.

Fold the outriggers (A) and (B); make sure they rest on their supports.

Make sure the SMV emblem (F) and reflectors (E) are in place and clean.

Do not exceed 10 mph (16 kmh).

Know the transport width of your cultivator, page 67.

IMPORTANT: Never raise outriggers to transport position or lower outriggers from transport position while machine is in motion.

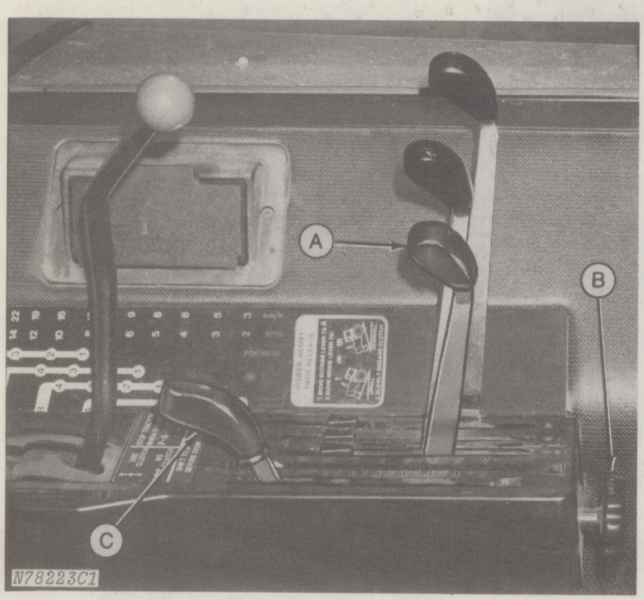
CAUTION: Stay clear of folding sections during raising or lowering.

CAUTION: When transporting the cultivator on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local governmental regulations. Various safety lights and devices are available from your John Deere dealer.

Field Operation and Adjustments

ROCKSHAFT CONTROL AND REMOTE CYLINDER OPERATING LEVERS

Control Levers for Cultivators Without Lift Assist Wheel



A—No. 1 Hydraulic Function Lever
B—Depth Adjusting Knob
C—Rockshaft Control Lever

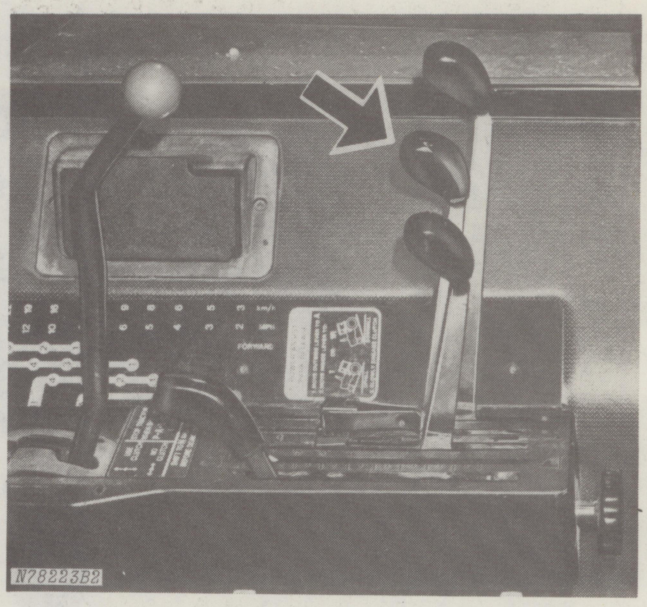
Raise and lower cultivator with the tractor rockshaft control lever. The No. 1 hydraulic function lever (A) is used to raise the outrigger to a slight angle for turning at end of rows, and for folding for transport.

Without Frame Gauge Wheels: Set depth adjusting knob to maintain 28-inch (711 mm) frame height for Trip Type Shank Cultivator and 31-inch (787 mm) for S-Tine Shank Cultivator.

With Frame Gauge Wheels on Center Frame Only: Push the rockshaft control lever (C) all the way forward to obtain "floating" action.

With Frame Gauge Wheels on Center Frame and Outriggers: Push the rockshaft and the No. 1 hydraulic function levers all the way forward to float positions.

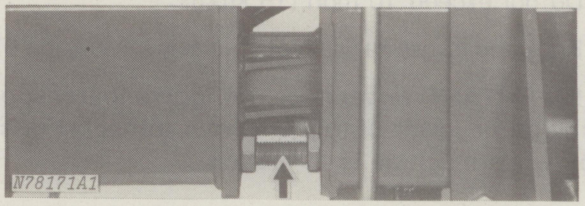
Control Levers for Cultivators with Lift Assist Wheel



Raise and lower cultivator with No. 2 hydraulic function control lever (bold arrow). Push lever forward into clip for raising and transporting. The No. 1 hydraulic function lever is used to raise the outriggers to a slight angle for turning at end of rows, and for folding for transport. Position the No. 1 hydraulic function lever in float position for field operation.

Frame height is maintained with frame gauge wheels.

Outrigger Floation

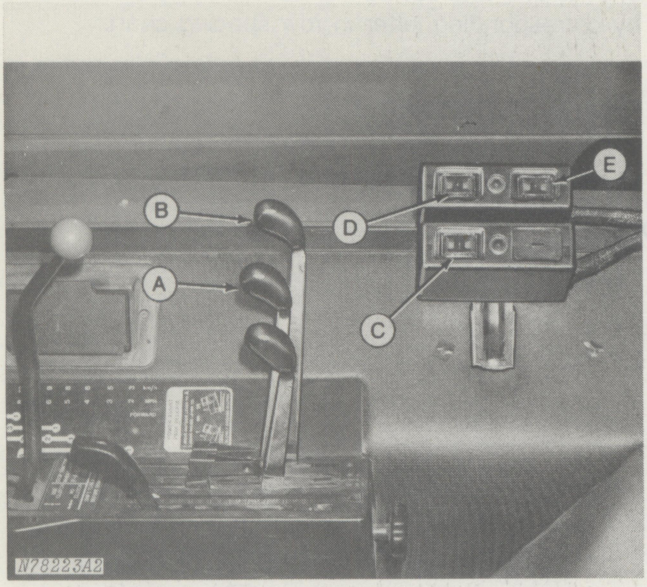


To allow outriggers to float down as well as up, turn the down-stop bolts in. Raise the outriggers to adjust bolts. Tighten lock nuts.

Outrigger frame gauge wheels are required.

NOTE: Due to additional movement of the outrigger rigs being allowed to float, it may be necessary to relocate the shovels or sweeps next to the row to prevent crop damage.

Controls for Split Rockshaft (Attachment)

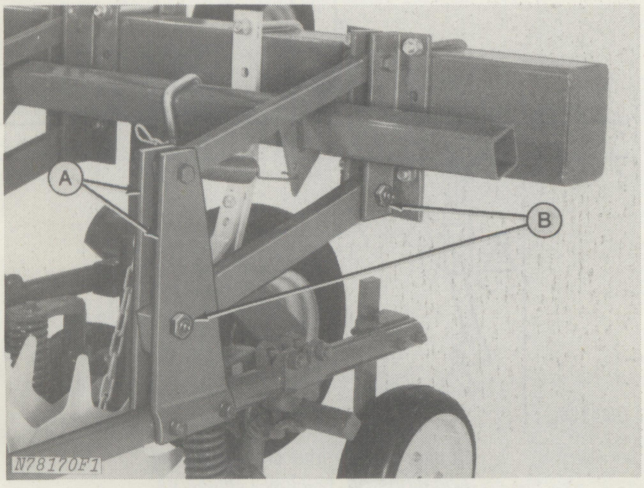


A—No. 2 Hydraulic Control Lever
B—No. 3 Hydraulic Control Lever
C—Left-Hand Rockshaft Control Switch
D—Center Frame Rockshaft Control Switch
E—Right-Hand Rockshaft Control Switch

Cultivator With Lift Assist Wheel: Push hydraulic function lever No. 3 (B) forward into clip and raise or lower rigs on center frame and outriggers by depressing proper switch (C), (D), or (E) control boxes.

Cultivator Without Lift Assist Wheel: Push hydraulic function lever No. 2 (A) forward into clip and raise or lower rigs on center frame and outriggers by depressing proper switch (C), (D), or (E) on control boxes.

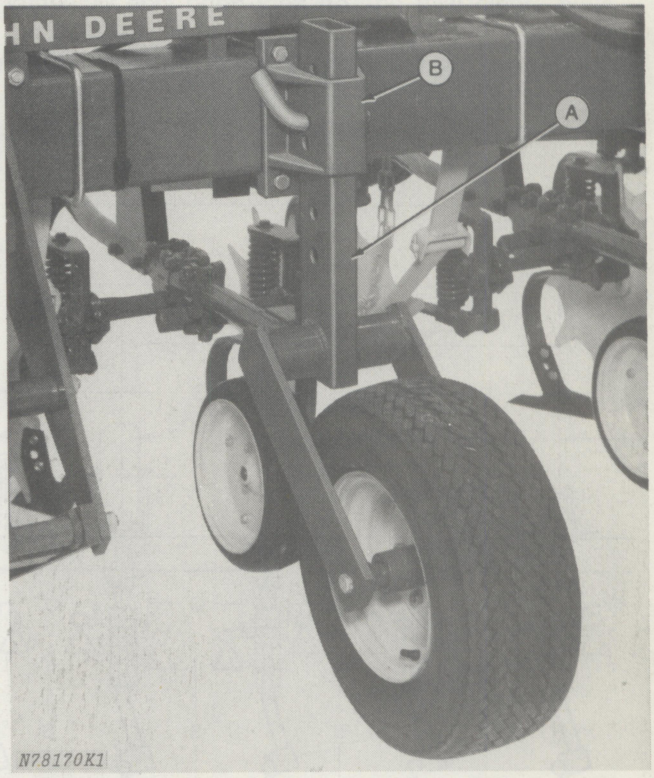
RIG MOVEMENT



A—Coupler Plate **B—Lock Nut**

The rig coupler plates (A) must be tight enough to eliminate side movement, but loose enough so rig will float with the ground level. Loosen lock nut (B) on pivot stud and turn stud to loosen or tighten coupler plates, then tighten nuts.

FRAME GAUGE WHEELS



A—Gauge Wheel Standard **B—Bracket**

For 28-inch (711 mm) frame height, position the gauge wheel standard (A) in bracket (B) with the pin through the upper hole in the bracket and the lower hole of the upper two holes in the standard.

For 31-inch (787 mm) frame height, position the gauge wheel standard in the bracket, with the pin through the upper hole in the bracket and the upper hole of the standard.

ROW SPACING

How To Use Charts and Diagrams

Determine which rig equipment you intend to use, then familiarize yourself with the meaning of the basic dimensions shown on the row spacing diagrams.

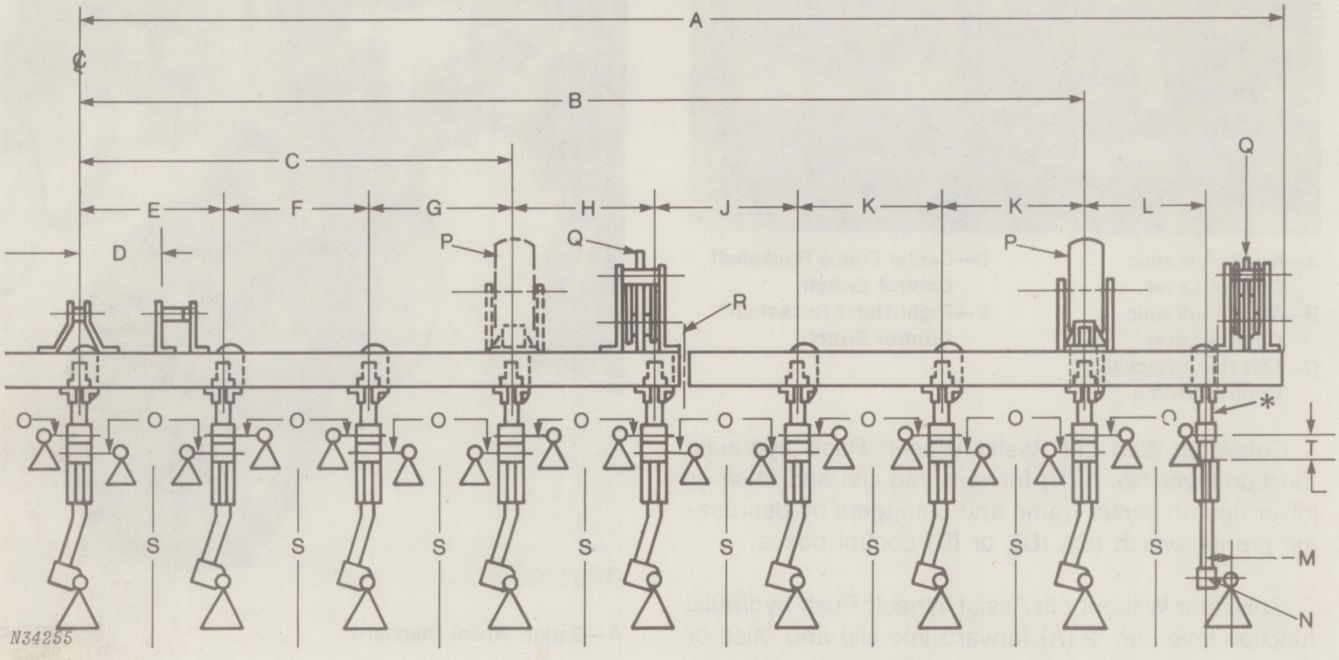
Next, begin with rigs on right-hand side of center of cultivator and set rig hanger spacings as indicated by corresponding letter in row spacing chart.

Finally, adjust clamps, crossarms and tools as indicated by row spacing chart.

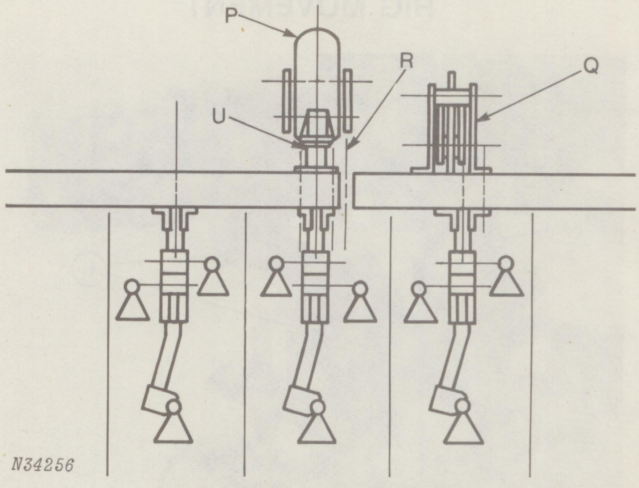
Repeat procedure for left-hand side of cultivator.

Row Spacing for Trip Shank Sweep Cultivators

8, 12, and 16-Row, 28-30 Inch (71 to 76 cm) Spacing



16-Row Shown



Coulter and Frame Gauge Wheel Locations on 12-Row Cultivators Attached to Tractors with Dual Wheels

DIMENSIONS, Inches (cm)

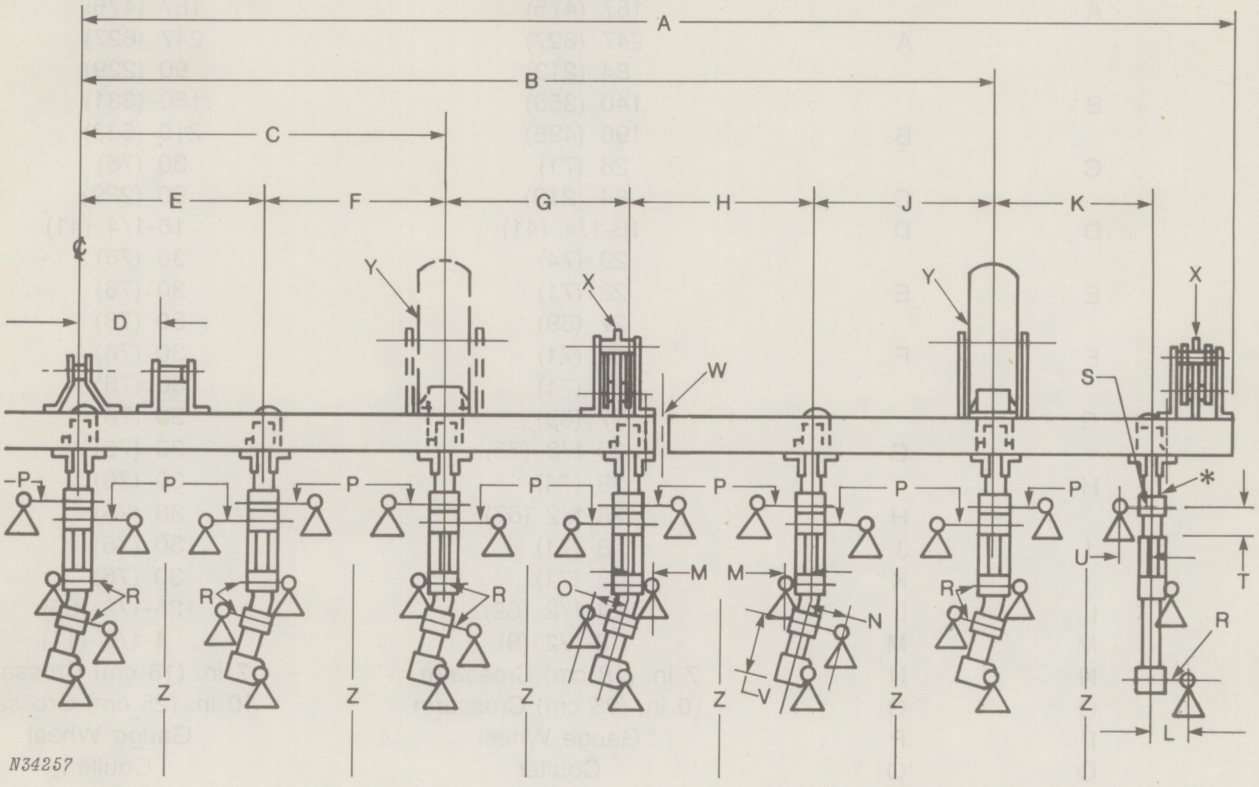
Number of Rows			Row Spacing	
8	**12**	**16**	**28 (71)**	**30 (76)**
A			130-1/2 (331)	130-1/2 (331)
	A		187 (475)	187 (475)
		A	247 (627)	247 (627)
B			84 (213)	90 (229)
	B		140 (356)	150 (381)
		B	196 (498)	210 (533)
	C		28 (71)	30 (76)
		C	84 (213)	90 (229)
D	D	D	16-1/4 (41)	16-1/4 (41)
E			29 (74)	30 (76)
	E	E	28 (71)	30 (76)
F			27 (69)	30 (76)
	F	F	28 (71)	30 (76)
G			28 (71)	30 (76)
	G		27 (69)	30 (76)
		G	29-1/2 (75)	30 (76)
	H		29 (74)	30 (76)
		H	26-1/2 (67)	30 (76)
	J	J	28 (71)	30 (76)
		K	28 (71)	30 (76)
L	L	L	24-1/2 (62)	25-1/2 (65)
M	M	M	3-1/2 (9)	4-1/2 (11)
N	N	N	7 in. (18 cm) Crossarm	7 in. (18 cm) Crossarm
O	O	O	10 in. (25 cm) Crossarm	10 in. (25 cm) Crossarm
P	P	P	Gauge Wheel	Gauge Wheel
Q	Q	Q	Coulter	Coulter
R	R	R	Hinge	Hinge
S	S	S	Row	Row
T	T	T	6 (15)	6 (15)
U	U	U	Spacer	Spacer

**NOTE: Outer rig on 8, 12, and 16 row is the same*

Row Spacing—Continued

6, 8, and 12-Row, 36- to 40-Inch (91 to 102 cm) Rows

Five Shank Single Rig



12-Row Shown

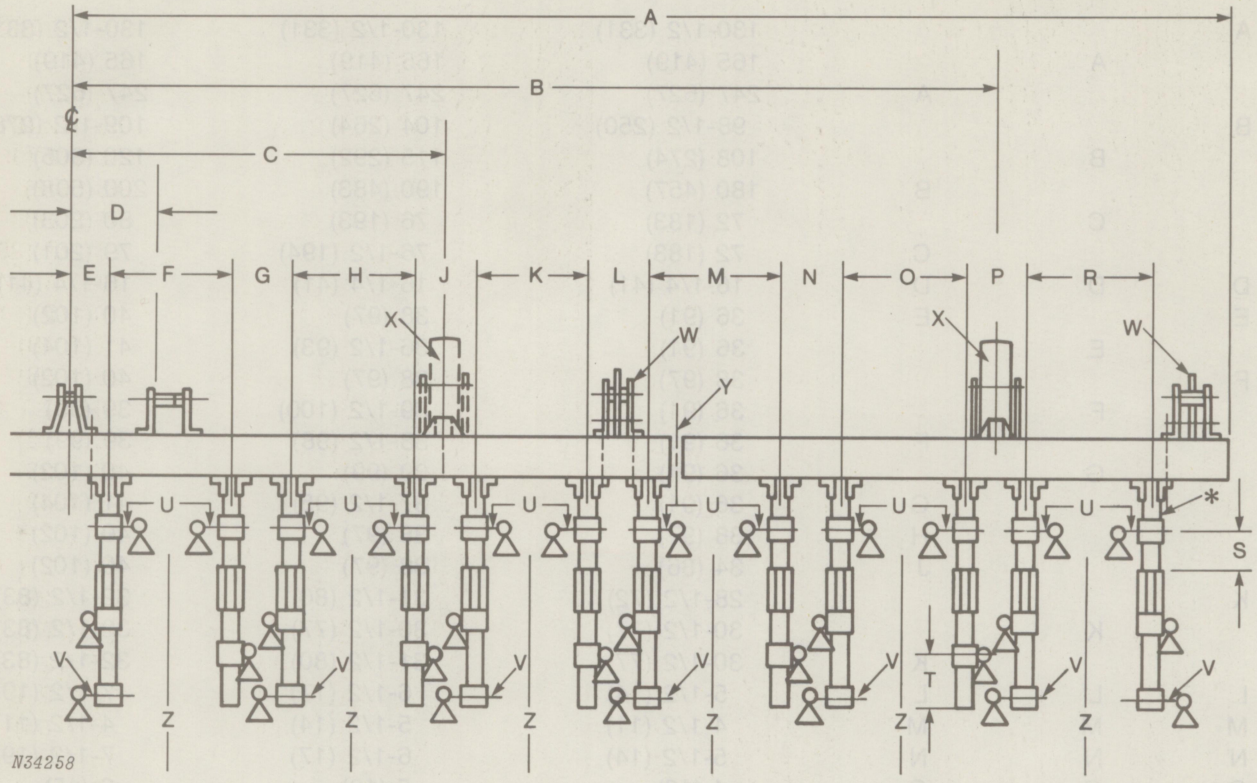
DIMENSIONS, Inches (cm)

Number of Rows			Row Spacing		
6	8	12	36 (91)	38 (97)	40 (102)
A			130-1/2 (331)	130-1/2 (331)	130-1/2 (331)
	A		165 (419)	165 (419)	165 (419)
		A	247 (627)	247 (627)	247 (627)
B			98-1/2 (250)	104 (264)	109-1/2 (278)
	B		108 (274)	115 (292)	120 (305)
		B	180 (457)	190 (483)	200 (508)
	C		72 (183)	76 (193)	80 (203)
		C	72 (183)	76-1/2 (194)	79 (201)
D	D	D	16-1/4 (41)	16-1/4 (41)	16-1/4 (41)
E		E	36 (91)	38 (97)	40 (102)
	E		36 (91)	36-1/2 (93)	41 (104)
F			38 (97)	38 (97)	40 (102)
	F		36 (91)	39-1/2 (100)	39 (99)
		F	36 (91)	38-1/2 (98)	39 (99)
	G		36 (91)	39 (99)	40 (102)
		G	36 (91)	37-1/2 (95)	41 (104)
		H	38 (97)	38 (97)	40 (102)
		J	34 (86)	38 (97)	40 (102)
K			28-1/2 (72)	31-1/2 (80)	32-1/2 (83)
	K		30-1/2 (77)	30-1/2 (77)	32-1/2 (83)
		K	30-1/2 (77)	31-1/2 (80)	32-1/2 (83)
L	L	L	5-1/2 (14)	6-1/2 (17)	7-1/2 (19)
M	M	M	4-1/2 (11)	5-1/2 (14)	4-1/2 (11)
N	N	N	5-1/2 (14)	6-1/2 (17)	7-1/2 (19)
O	O	O	4 (10)	5 (13)	6 (15)
**P	P	P	14 (36)	14 (36)	14 (36)
**R	R	R	10 (25)	10 (25)	10 (25)
**S	S	S	7 (18)	7 (18)	7 (18)
T	T	T	6 (15)	6 (15)	6 (15)
U	U	U	4-1/2 (11)	4-1/2 (11)	4-1/2 (11)
W	W	W	Hinge	Hinge	Hinge
X	X	X	Coulter	Coulter	Coulter
Y	Y	Y	Gauge Wheel	Gauge Wheel	Gauge Wheel
Z	Z	Z	Row	Row	Row

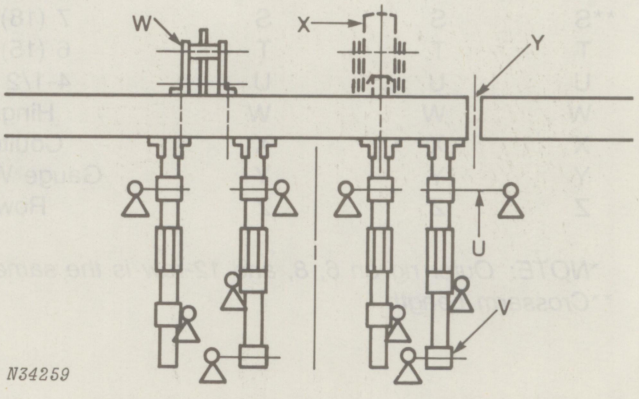
**NOTE: Outer rig on 6, 8, and 12-row is the same.*
***Crossarm Length*

Row Spacing—Continued

6, 8, and 12-Row Double Rig, 36 to 40 Inch (91 to 102 cm) Rows



12-Row Shown



Optional Frame Gauge Wheel and Coulter Location
12-Row, 40-Inch (1.02 mm) Spacing

DIMENSIONS, Inches (cm)

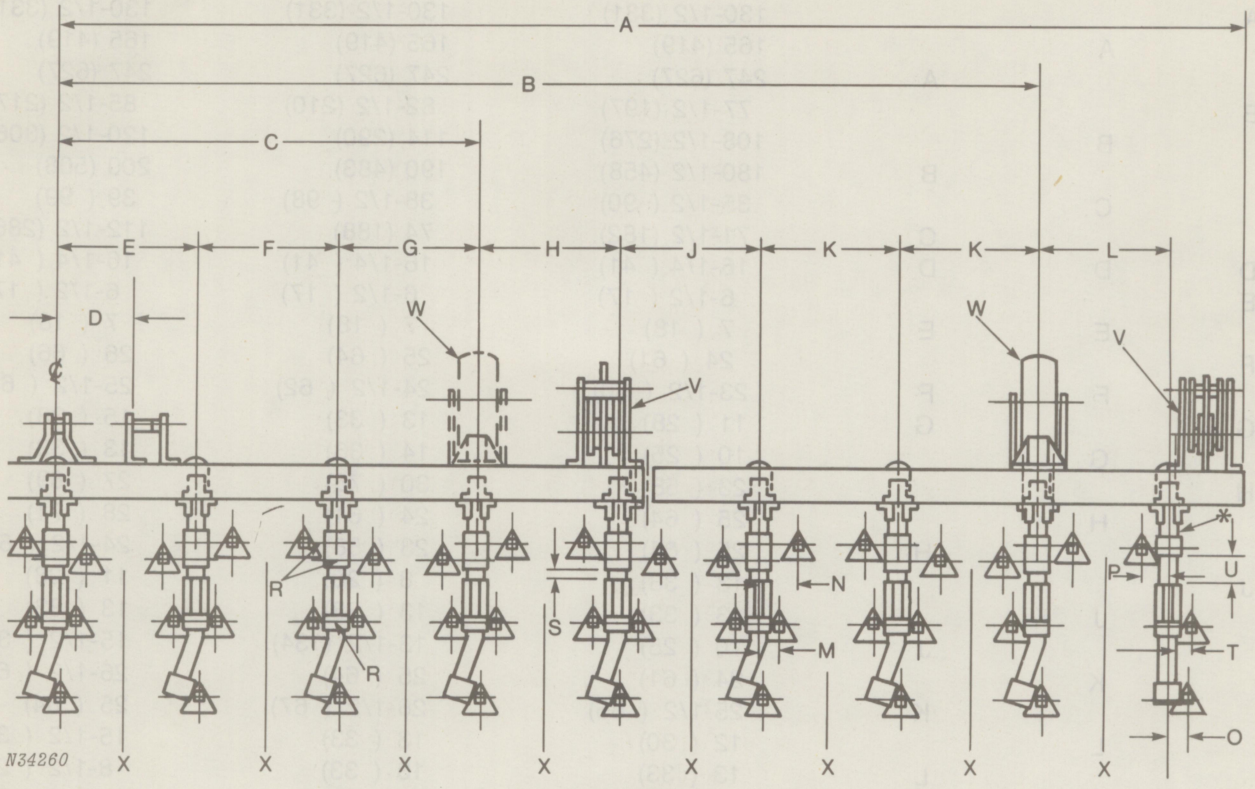
Number of Rows			Row Spacing		
6	8	12	36 (91)	38 (97)	40 (102)
A			130-1/2 (331)	130-1/2 (331)	130-1/2 (331)
	A		165 (419)	165 (419)	165 (419)
		A	247 (627)	247 (627)	247 (627)
B			77-1/2 (197)	82-1/2 (210)	85-1/2 (217)
	B		108-1/2 (276)	114 (290)	120-1/2 (306)
		B	180-1/2 (458)	190 (483)	200 (508)
	C		35-1/2 (90)	38-1/2 (98)	39 (99)
		C	71-1/2 (182)	74 (188)	112-1/2 (286)
D	D	D	16-1/4 (41)	16-1/4 (41)	16-1/4 (41)
E			6-1/2 (17)	6-1/2 (17)	6-1/2 (17)
	E	E	7 (18)	7 (18)	7 (18)
F			24 (61)	25 (64)	26 (66)
	F	F	23-1/2 (60)	24-1/2 (62)	25-1/2 (64)
G		G	11 (28)	13 (33)	15 (38)
	G		10 (25)	14 (36)	13 (33)
H			23 (58)	30 (76)	27 (69)
	H		25 (64)	24 (61)	28 (71)
		H	25 (64)	23 (58)	24-1/2 (62)
J			13 (33)	8 (20)	11 (28)
	J		13 (33)	13 (33)	13 (33)
		J	10 (25)	13-1/2 (34)	15-1/2 (39)
	K		24 (61)	25 (64)	26-1/2 (67)
		K	25-1/2 (65)	26-1/2 (67)	25 (64)
	L		12 (30)	13 (33)	15-1/2 (39)
		L	13 (33)	13 (33)	8-1/2 (22)
		M	24 (61)	25 (64)	31-1/2 (80)
		N	11 (28)	12 (30)	15 (38)
		O	25 (64)	25 (64)	25 (64)
		P	11 (28)	13 (33)	15 (38)
R	R	R	26 (66)	26 (66)	26 (66)
S	S	S	6 (15)	6 (15)	6 (15)
T	T	T	12 (30)	12 (30)	12 (30)
**U			7 (18)	10 (25)	10 (25)
	U		7 (18)	7 (18)	7 (18)
		U	7 (18)	7 (18)	7 (18)
**V			10 (25)	7 (18)	7 (18)
	V		10 (25)	10 (25)	10 (25)
		V	10 (25)	10 (25)	10 (25)
W	W	W	Coulter	Coulter	Coulter
X	X	X	Gauge Wheel	Gauge Wheel	Gauge Wheel
Y	Y	Y	Hinge	Hinge	Hinge
Z	Z	Z	Row	Row	Row

**NOTE: Outer rig on 6, 8, and 12-row the same.*

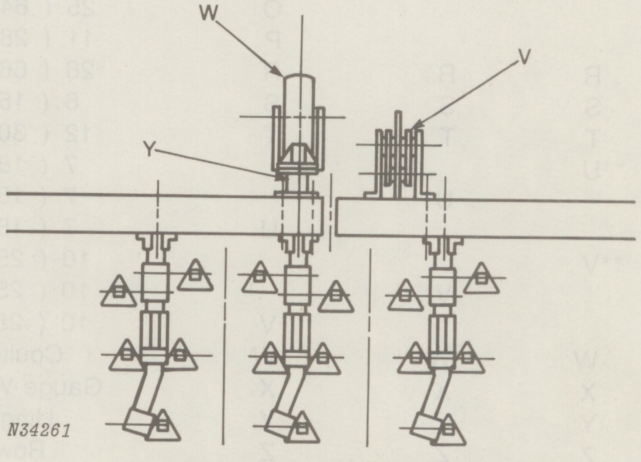
***Crossarm length*

Row Spacing for S-Tine Cultivators

8, 12, and 16-Row, 28 to 32-Inch (71 to 81 cm) Spacing



16-Row Shown



Coulter and Frame Gauge Wheel Locations on 12-Row Cultivators Attached to Tractors with Dual Wheels

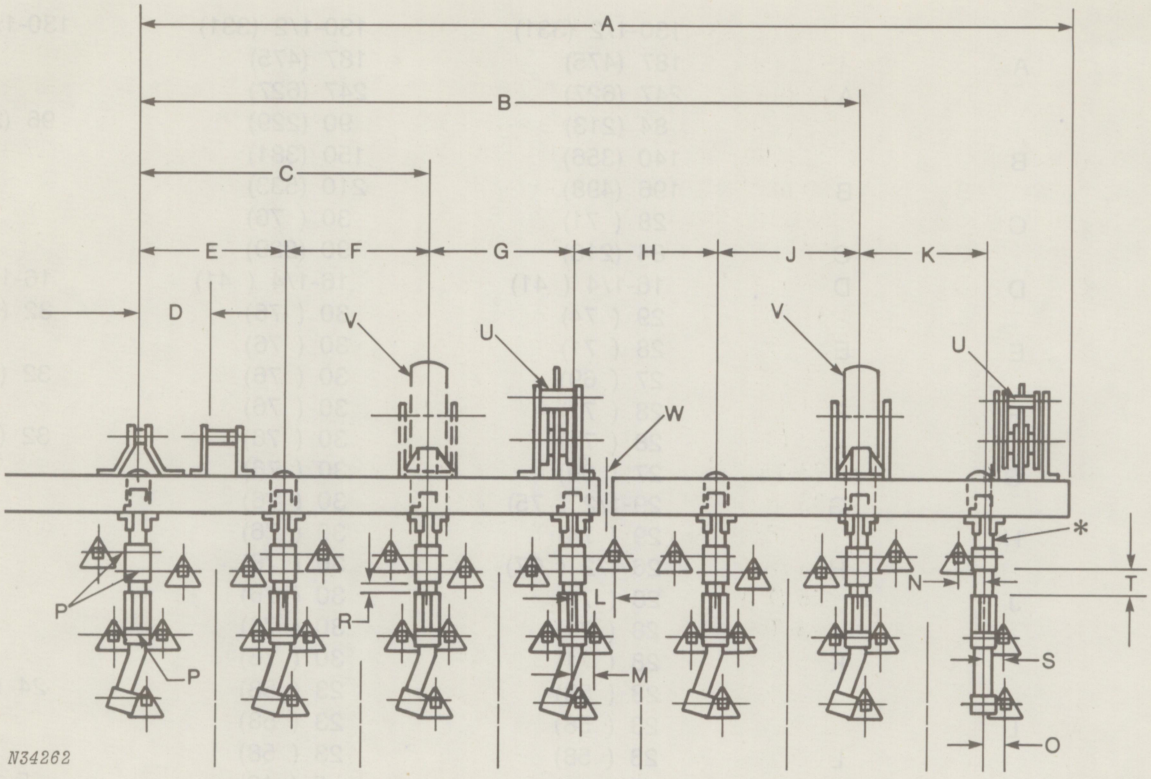
DIMENSIONS, Inches (cm)

Number of Rows			Row Spacing		
8	12	16	28 (71)	30 (76)	32 (81)
A			130-1/2 (331)	130-1/2 (331)	130-1/2 (331)
	A		187 (475)	187 (475)	
		A	247 (627)	247 (627)	
B			84 (213)	90 (229)	96 (244)
	B		140 (356)	150 (381)	
		B	196 (498)	210 (533)	
	C		28 (71)	30 (76)	
		C	84 (213)	90 (229)	
D	D	D	16-1/4 (41)	16-1/4 (41)	16-1/4 (41)
E			29 (74)	30 (76)	32 (81)
	E	E	28 (71)	30 (76)	
F			27 (69)	30 (76)	32 (81)
	F	F	28 (71)	30 (76)	
G			28 (71)	30 (76)	32 (81)
	G		27 (69)	30 (76)	
		G	29-1/2 (75)	30 (76)	
	H		29 (74)	30 (76)	
		H	26-1/2 (67)	30 (76)	
	J		28 (71)	30 (76)	
		J	28 (71)	30 (76)	
		K	28 (71)	30 (76)	
L			23 (58)	23 (58)	24 (61)
	L		23 (58)	23 (58)	
		L	23 (58)	23 (58)	
M			5 (13)	5 (13)	5-1/2 (14)
	M	M	5 (13)	5 (13)	
N			10 (25)	10 (25)	11 (28)
	N	N	10 (25)	10 (25)	
O			5 (13)	7 (18)	8 (20)
	O	O	5 (13)	7 (18)	
P			5 (13)	3 (8)	3 (8)
	P	P	5 (13)	3 (8)	
R			14 (36)	14 (36)	14 (36)
	R	R	14 (36)	14 (36)	
S	S	S	4 (10)	4 (10)	4 (10)
T	T	T	3 (8)	3 (8)	3 (8)
U	U	U	6 (15)	6 (15)	6 (15)
V	V	V	Coulter	Coulter	Coulter
W	W	W	Gauge Wheel	Gauge Wheel	Gauge Wheel
X	X	X	Row	Row	Row
Y	Y	Y	Spacer	Spacer	Spacer

**NOTE: Outer rig on 8, 12, and 16-row is the same.*

Row Spacing—Continued

6, 8, and 12-Row, 34 to 40-Inch (86 to 102 cm) Spacing



12-Row Shown

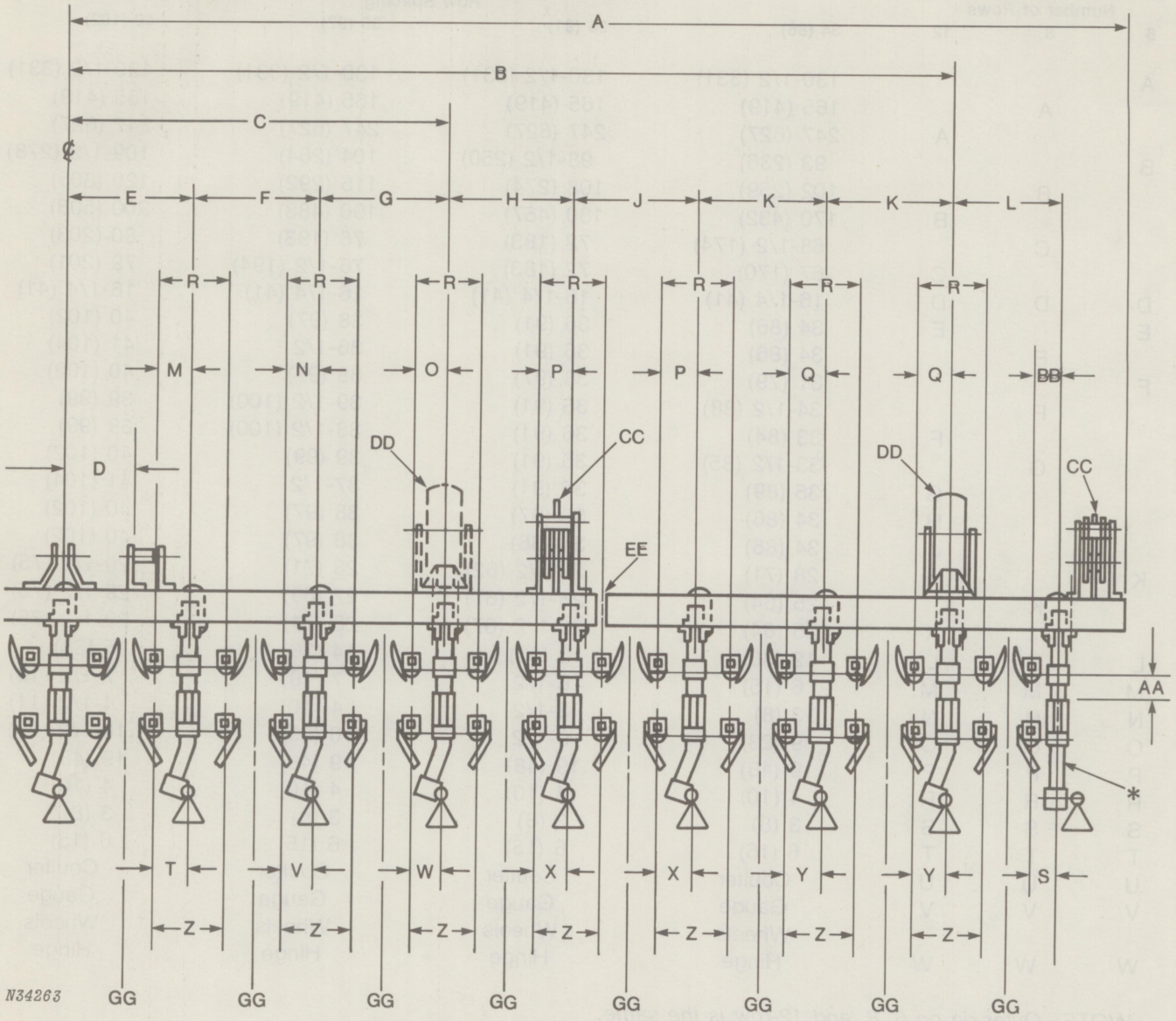
DIMENSIONS, Inches (cm)

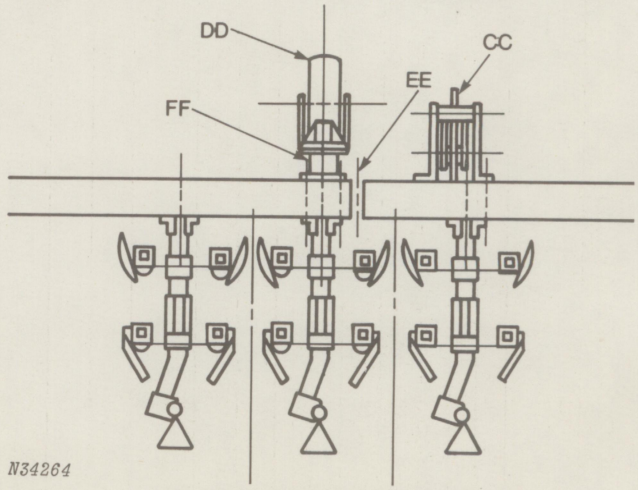
Number of Rows			Row Spacing			
6	8	12	34 (86)	36 (91)	38 (97)	40 (102)
A			130-1/2 (331)	130-1/2 (331)	130-1/2 (331)	130-1/2 (331)
	A		165 (419)	165 (419)	165 (419)	165 (419)
		A	247 (627)	247 (627)	247 (627)	247 (627)
B			93 (236)	98-1/2 (250)	104 (264)	109-1/2 (278)
	B		102 (259)	108 (274)	115 (292)	120 (305)
		B	170 (432)	180 (457)	190 (483)	200 (508)
	C		68-1/2 (174)	72 (183)	76 (193)	80 (203)
		C	67 (170)	72 (183)	76-1/2 (194)	79 (201)
D	D	D	16-1/4 (41)	16-1/4 (41)	16-1/4 (41)	16-1/4 (41)
E		E	34 (86)	36 (91)	38 (97)	40 (102)
	E		34 (86)	36 (91)	36-1/2	41 (104)
F			31 (79)	38 (97)	38 (97)	40 (102)
	F		34-1/2 (88)	36 (91)	39-1/2 (100)	39 (99)
		F	33 (84)	36 (91)	38-1/2 (100)	39 (99)
	G		33-1/2 (85)	36 (91)	39 (99)	40 (102)
		G	35 (89)	36 (91)	37-1/2	41 (104)
		H	34 (86)	38 (97)	38 (97)	40 (102)
		J	34 (86)	34 (86)	38 (97)	40 (102)
K			28 (71)	24-1/2 (62)	28 (71)	29-1/2 (75)
	K		25 (64)	26-1/2 (67)	27 (69)	29-1/2 (75)
		K	25 (64)	26-1/2 (67)	28 (71)	29-1/2 (75)
L	L	L	12 (30)	13 (33)	14 (36)	15 (38)
M	M	M	6 (15)	6-1/2	7 (18)	7-1/2 (19)
N	N	N	3 (8)	3-1/2	4 (10)	4-1/2 (11)
O	O	O	9 (23)	9-1/2	10 (25)	10-1/2 (27)
P	P	P	19 (48)	19 (48)	19 (48)	19 (48)
R	R	R	4 (10)	4 (10)	4 (10)	4 (10)
S	S	S	3 (8)	3 (8)	3 (8)	3 (8)
T	T	T	6 (15)	6 (15)	6 (15)	6 (15)
U	U	U	Coulter	Coulter	Coulter	Coulter
V	V	V	Gauge Wheels	Gauge Wheels	Gauge Wheels	Gauge Wheels
W	W	W	Hinge	Hinge	Hinge	Hinge

**NOTE: Outer rig on 6, 8, and 12-row is the same.*

Row Spacing Beet and Bean Cultivator

8, 12, and 16-Row, 28 to 30-Inch (71 to 76 cm) Spacing





Coulter and Frame Gauge Wheels Locations on 12-Row Cultivators Attached to Tractors with Dual Wheels

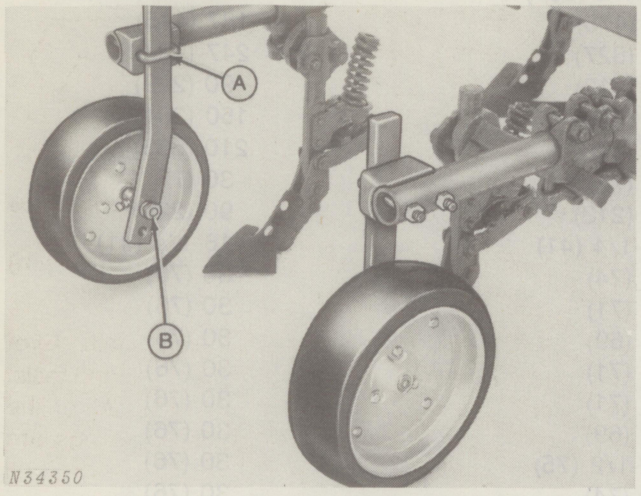
DIMENSIONS, Inches (cm)

Number of Rows			Row Spacing	
8	12	16	28 (71)	30 (76)
A			130-1/2 (331)	130-1/2 (331)
	A		187 (475)	187 (475)
		A	247 (627)	247 (627)
B			84 (213)	90 (229)
	B		140 (356)	150 (381)
		B	196 (498)	210 (533)
	C		28 (71)	30 (76)
		C	84 (213)	90 (229)
D	D	D	16-1/4 (41)	16-1/4 (41)
E			29 (74)	30 (76)
	E	E	28 (71)	30 (76)
F			27 (69)	30 (76)
	F	F	28 (71)	30 (76)
G			28 (71)	30 (76)
	G		27 (69)	30 (76)
		G	29-1/2 (75)	30 (76)
	H		29 (74)	30 (76)
		H	26-1/2 (67)	30 (76)
	J	J	28 (71)	30 (76)
		K	28 (71)	30 (76)
L	L	L	24-1/2 (62)	25-1/2 (65)
M			10-1/2 (27)	10-1/2 (27)
	M	M	9-1/2 (24)	10-1/2 (27)
N	N	N	9-1/2 (24)	10-1/2 (27)
O			9-1/2 (24)	10-1/2 (27)
	O		8-1/2 (22)	10-1/2 (27)
		O	11 (28)	10-1/2 (27)
	P	P	9-1/2 (24)	10-1/2 (27)
		Q	9-1/2 (24)	10-1/2 (27)
R	R	R	19 (48)	21 (53)
S	S	S	4-1/2 (11)	5-1/2 (14)
T			10 (25)	10 (25)
	T	T	9 (23)	10 (25)
V	V	V	9 (23)	10 (25)
W			9 (23)	10 (25)
	W		8 (20)	10 (25)
		W	10-1/2 (27)	10 (25)
	X	X	9 (23)	10 (25)
		Y	9 (23)	10 (25)
Z	Z	Z	18 (46)	20 (51)
AA	AA	AA	6 (15)	6 (15)
BB	BB	BB	6 (15)	6 (15)
CC	CC	CC	Coulter	Coulter
DD	DD	DD	Gauge Wheel	Gauge Wheel
EE	EE	EE	Hinge	Hinge
FF	FF	FF	Spacer	Spacer
GG	GG	GG	Row	Row

**NOTE: Outer rig on 8, 12, and 16-row is the same.*

DEPTH CONTROL

Rig gauge wheels are required on sweep-type cultivators to determine cultivating or working depth.



Rig Gauge Wheels on Sweep Cultivator

Set all gauge wheels to insure uniform cultivating depth of rigs. The bearing shaft (B) is normally in UPPER hole of shank for trip shank sweep cultivator and in LOWER hole for S-tine shank share cultivator.

Placing a block under each wheel, as it is adjusted, will enable quick and accurate adjustment. A block of the desired height may be prepared in advance.

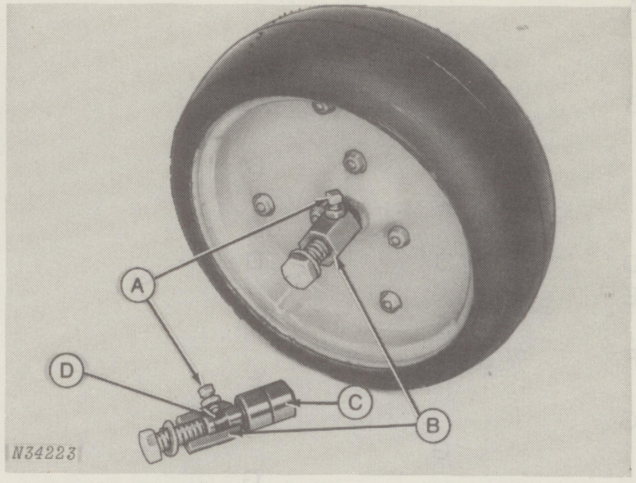
It may be necessary to set shanks following the tractor wheels in a lower position, to maintain uniform cultivating depth.

To set cultivating depth, loosen nuts on U-bolt clamps (A) and position the gauge wheels about 1 inch (25 mm) above lowest point of sweeps. Tighten nuts securely.

NOTE: Gauge wheel shanks may hit frame when gauge wheel encounters humps, or when cultivator with split rockshaft is raised. Lower shank and move wheel to upper hole in shank to prevent this. Check main frame height. See page 14.

The gauge wheels should sit directly under rig pipes with bend ahead of U-bolt clamps. Refer to row spacing diagrams on pages 16-27 for additional shank location details.

Gauge Wheel Bearing and Sleeve



A—Set Screw
B—Gauge Wheel Sleeve
C—Bearing
D—Bearing Shaft Groove

The gauge wheel sleeve (B) must be assembled on the gauge wheel bearing shaft as shown above.

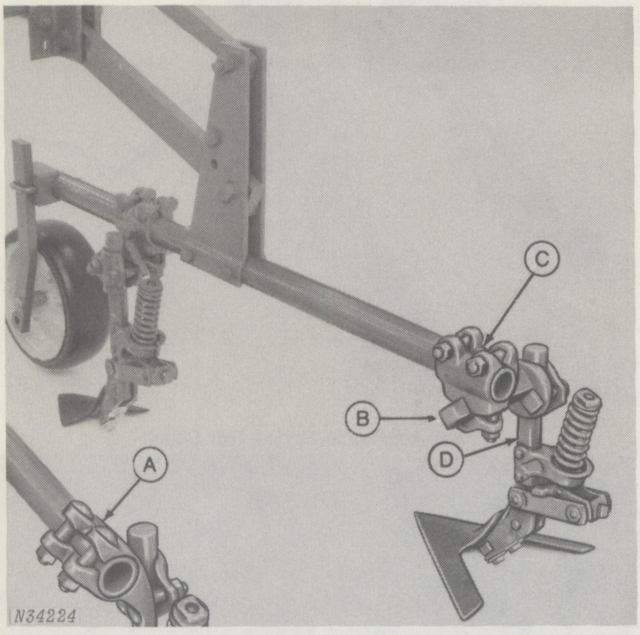
A portion of the sleeve has been cut away to show position of set screw (A) in the bearing shaft groove (D).

Tighten the set screw in bearing shaft groove to prevent loss of gauge wheel or undue gauge wheel bearing (C) failure.

Keep set screw and lock nut tight.

POSITIONING CLAMPS, SHANKS, AND CROSSARMS

Adjusting Cultivators with Trip Type Shanks



A—Offset Clamp **C—Rig Clamp**
B—Crossarm **D—Shank**

When cultivating, shanks should be perpendicular to the ground; tools should penetrate soil to an equal depth; and crossarms (B) should be set correctly for row spacing and crop condition.

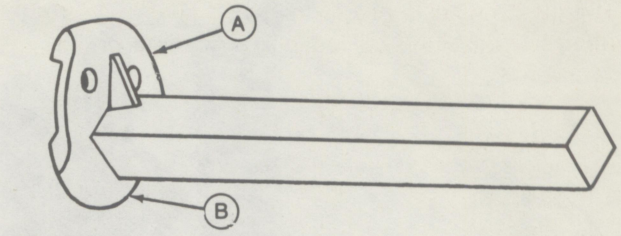
To straighten shanks (D), loosen nuts on top of rig clamps (A) and (C) and turn crossarm or clamp until shank is perpendicular to the ground. Tighten nuts after setting shanks.

To move crossarms left or right, loosen nuts on bottom of rig clamps. See row spacing diagrams, pages 16 to 27 for crossarm location. After positioning crossarms, tighten nuts.

To place shanks at same level, loosen nuts on crossarms. Shanks can be adjusted at various distances above clamps in order to obtain even penetration of tools.

NOTE: Placement of clamps varies for different versions of the basic cultivator. Refer to row spacing diagrams, pages 16 to 27, for proper placement of clamps, shanks, and crossarms for each version.

IMPORTANT: If using Quick-Return Spring-Trip Shanks, make sure there is adequate clearance between the shank and the crossarm behind it to prevent shank from striking the crossarm when an obstruction is encountered.

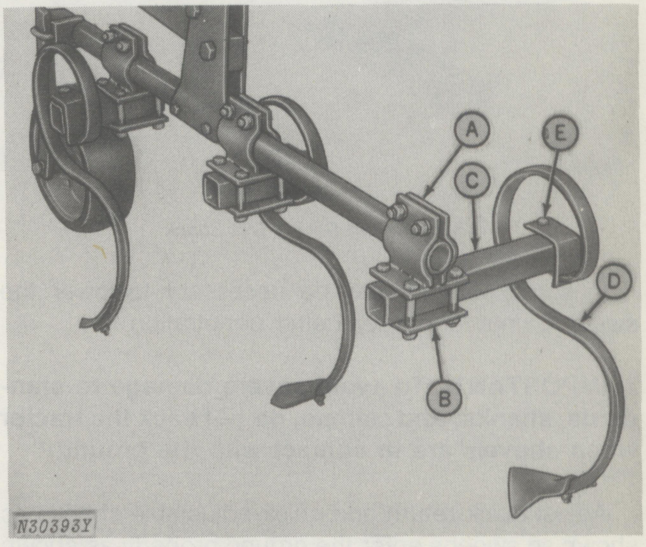


A—Long Side **B—Short Side**

The clamp end of the crossarm is 3/4-inch (19 mm) longer on one side than on the other.

The crossarms are installed with the short side (B) of clamp up when holding most types of shanks and tools. They can be installed with the long side (A) of the clamp up to gain more rig clearance when rigs are raised.

Adjusting Cultivators with S-tine Shanks



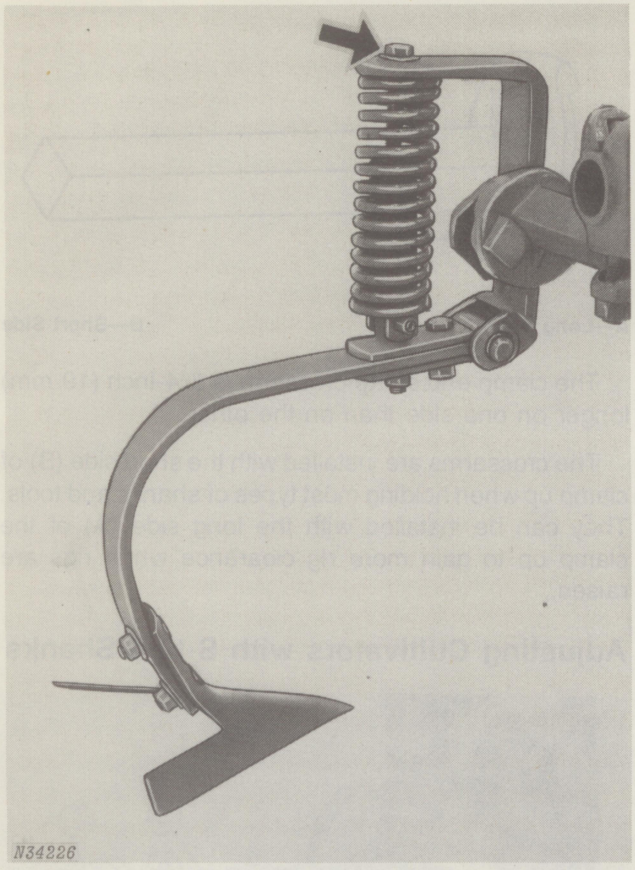
A—Rig Clamps **C—Beams** **E—Shank Clamp Bolt**
B—Rig Clamp Plates **D—Shanks**

Adjust shanks (D) so they are perpendicular to the ground when cultivating; set beams (C) and shanks (D) correctly for row spacing and crop conditions.

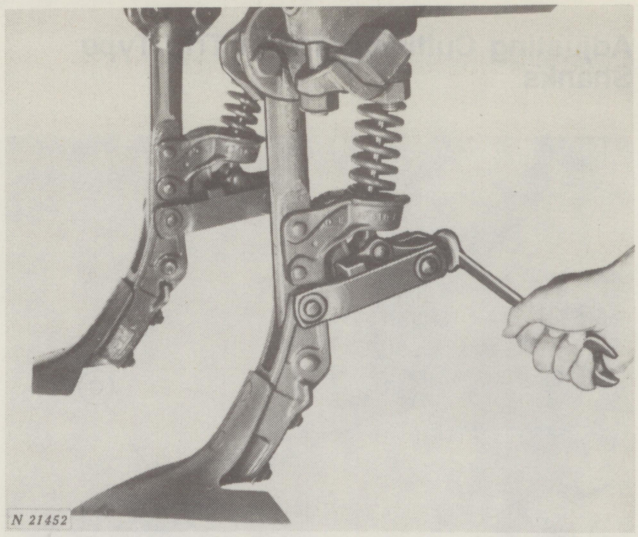
To straighten shanks (D), loosen nuts on top of rig clamps (A) and turn clamp until shank is perpendicular to the ground.

To move shanks (D) or beams (C) left or right, loosen nuts on shank bolt (E) or rig clamp plates (B). See row spacing diagrams, pages 16 to 27 for beam location.

ADJUSTING TILT OF SWEEPS



Quick-Return Spring-Trip Shank



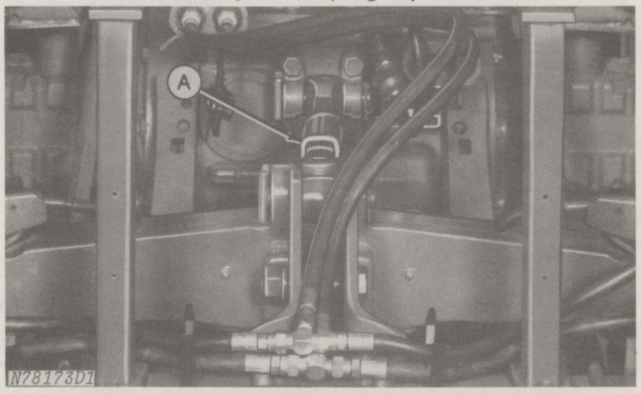
Quick-Adjustable Spring-Trip Shank

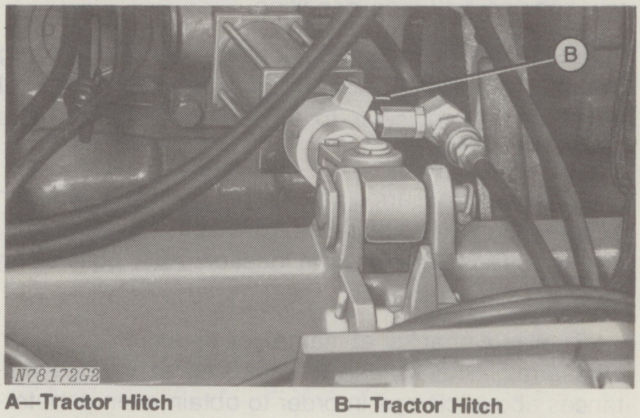
In some soils, it may be necessary to lower the sweep points further for better penetration.

IMPORTANT: To avoid severe damage to standards, shanks, and clamps, do not back the tractor when shovels are in contact with the ground.

Adjust quick-return and quick-adjustable shanks as shown so sweeps enter the ground properly as shown below.

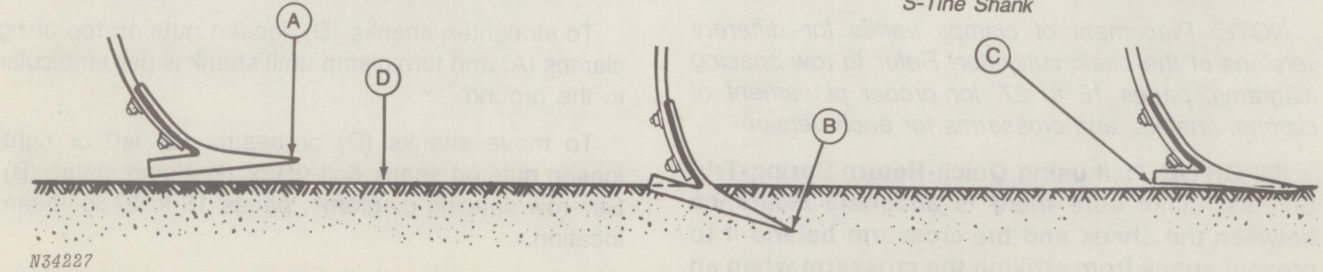
Adjust S-Tine Shanks so sweeps enter the ground properly as shown below by adjusting the tractor hitch center link (A) or tractor hitch center cylinder (B).





A—Tractor Hitch Center Link **B—Tractor Hitch Center Cylinder**

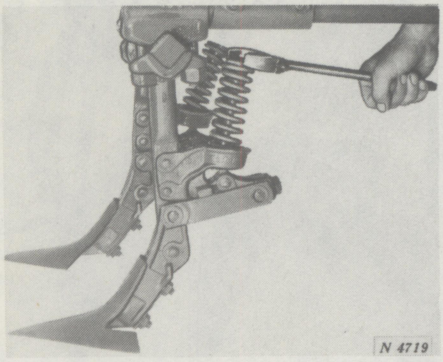
S-Tine Shank



A—Point Too High **B—Point Too Low** **C—Correct Setting - Sweep Tilt 1/8 to 1/4-Inch (3.2 to 6.4 mm)** **D—Ground Line**

ADJUSTING TRIPPING ACTION OF SHANKS

Quick-Adjustable Spring-Trip Shank



Adjust tripping action of quick-adjustable shanks by turning nut at top of spring clockwise to increase tension or counterclockwise to decrease tension.

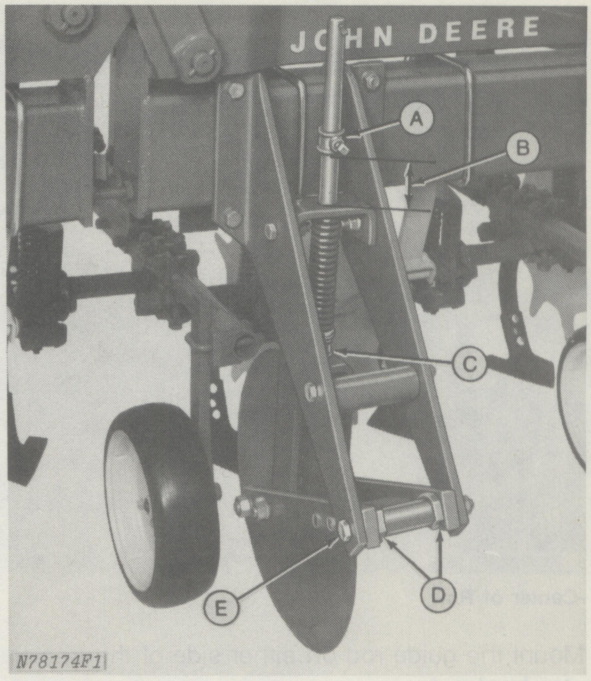
Quik-Return Spring-Trip Shank

This shank is designed to hold the sweep in a preset operating position throughout a normal range of operating conditions.

The shank will trip to a maximum vertical height of 5-1/2 inches (140 mm) and automatically return to correct operating position when the obstruction is cleared.

Tripping action is determined by spring tension and no adjustment is needed other than sweep tilt as explained on page 30.

ADJUSTING ROLLING COULTERS



A—Upper Collar
B—1-Inch
C—Lower Collar
D—Eccentric Pivots
E—Pivot Bolt

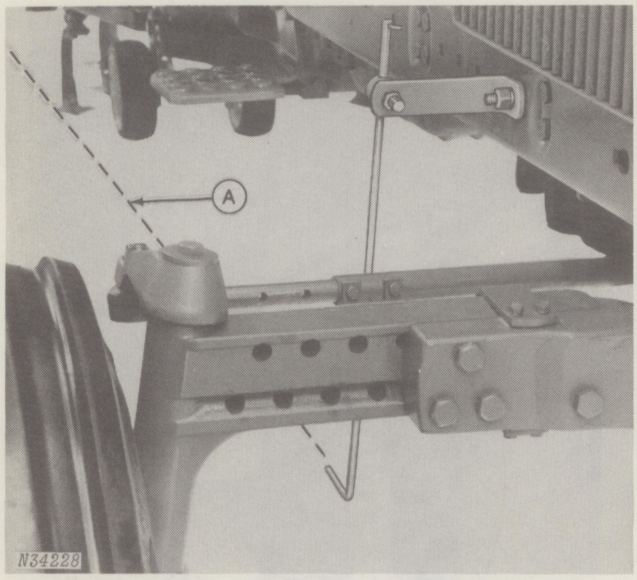
Each rolling coulter should be adjusted so it runs deep enough to prevent side sway. However, it should not be run so deep that trash builds up at the hubs.

When operating in the field, the spring should be under tension and the upper collar (A) approximately 1 inch (25 mm) (B) above the brace to maintain proper floating action.

Adjust the coulter so it operates in line with the cultivator, by turning the eccentric pivots (D) on the pivot bolt. Loosen pivot bolt (E) and use an open end wrench or a punch to turn one pivot until the coulter is straight. For additional adjustment, turn the second pivot in the opposite direction of the first. Tighten pivot bolt and make sure it is tight at all times.

When cultivating in adverse conditions, it may be necessary to increase spring tension. To do so, loosen the upper collar, raise cultivator, move the lower collar (C) up to the desired position, and tighten in place. Lower the cultivator to the floor or ground and reset the upper collar approximately 2 to 3 inches (51 to 76 mm) above the brace. This will place the collar approximately 1 inch (25 mm) above the brace during field operation.

GUIDE ROD

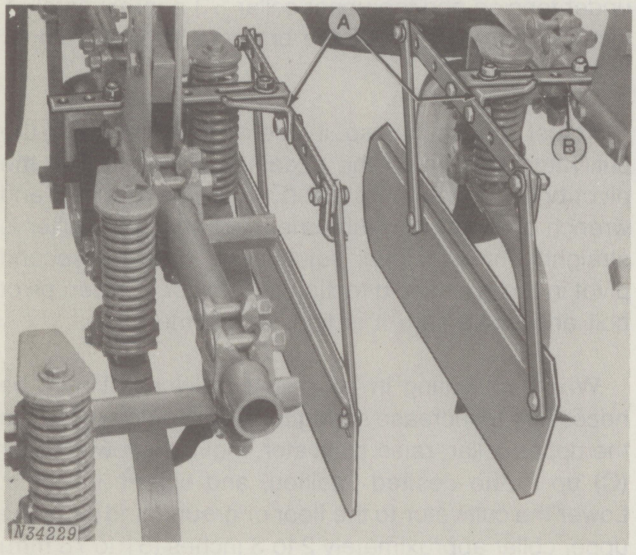


A—Center of Row

Mount the guide rod on either side of the tractor or tractor front axle.

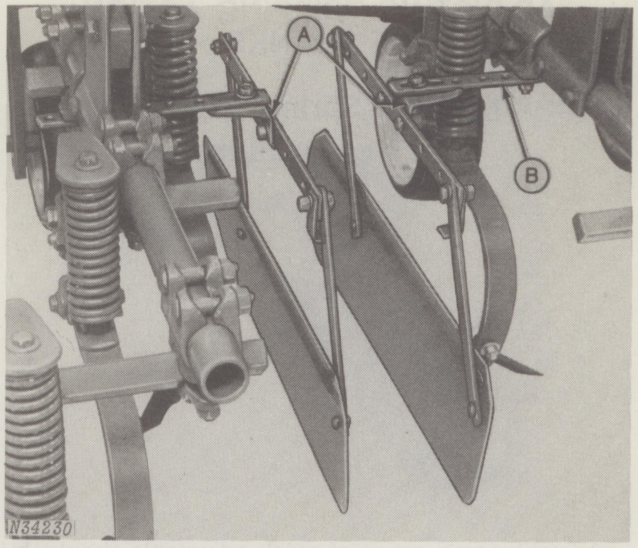
RIG-MOUNTED SHIELDS

Rig-mounted shields may be assembled in various positions for different field conditions and row spacings. The following illustrations show the various positions of hanger straps, brackets and shields for cultivating on level land, listed crops, and beds.



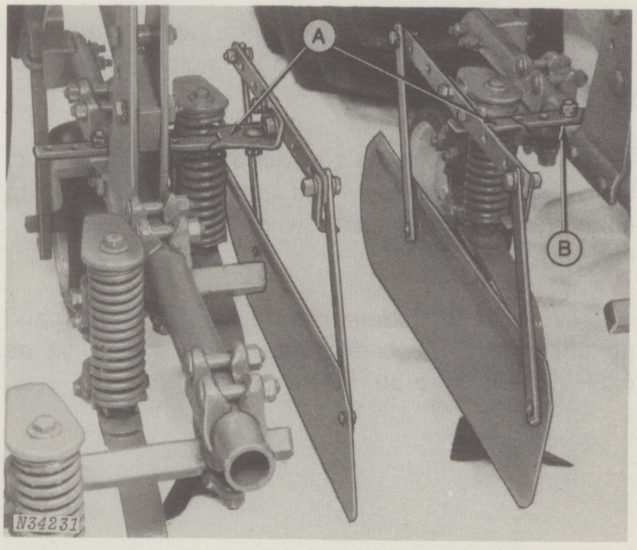
A—Hanger Brackets Down **B—Hanger Straps Up**

Level Land Position



A—Hanger Brackets Down **B—Hanger Straps Down**

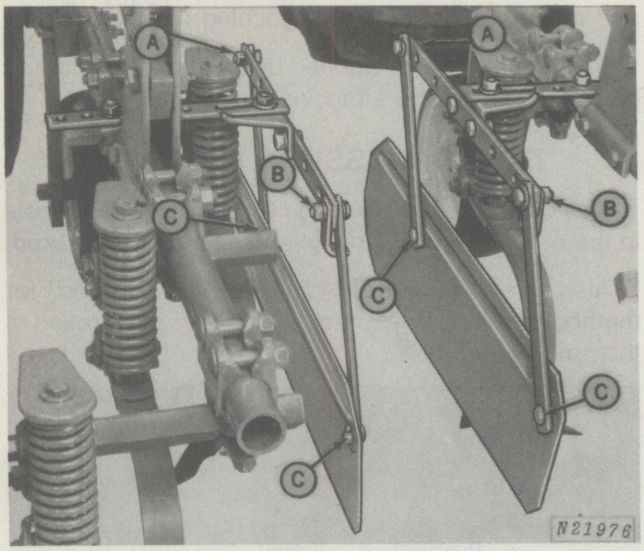
Listed Crop Position



A—Hanger Brackets Up **B—Hanger Straps Up**

Beds Position

Shield Adjustments

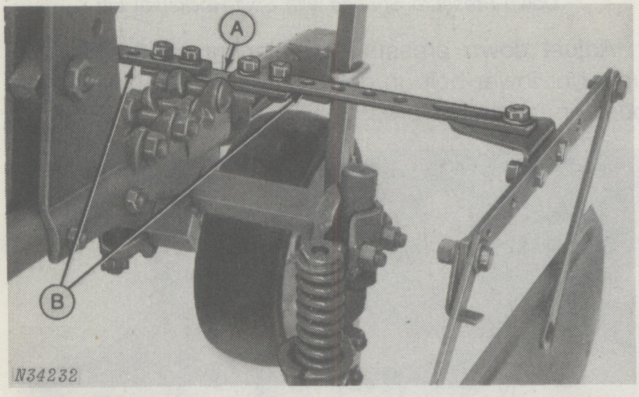


Set bolts at "A" and "B" loosely enough to allow shields to float up and down freely. Be sure rivets at "C" do not bind to limit shield movement.

Pull shield stops back against pivot straps to set shield height. Tighten nuts on bolts "B" to hold stops in position.

Slide hanger brackets in or out in hanger straps to position shields in relation to plants. If further adjustment is required, reposition hanger straps on U-bolts as necessary.

Shield Arm Extensions



A—Extension **B—Hanger Straps**

Bolt hanger straps (B) to shield arm extension (A) on all but the outside rigs on cultivators EXCEPT the following:

Six-Row Sweep (36-40 Inch [0.91-1.02 m] Rows)

Eight-Row Sweep (36-40 Inch [0.91-1.02 m] Rows)

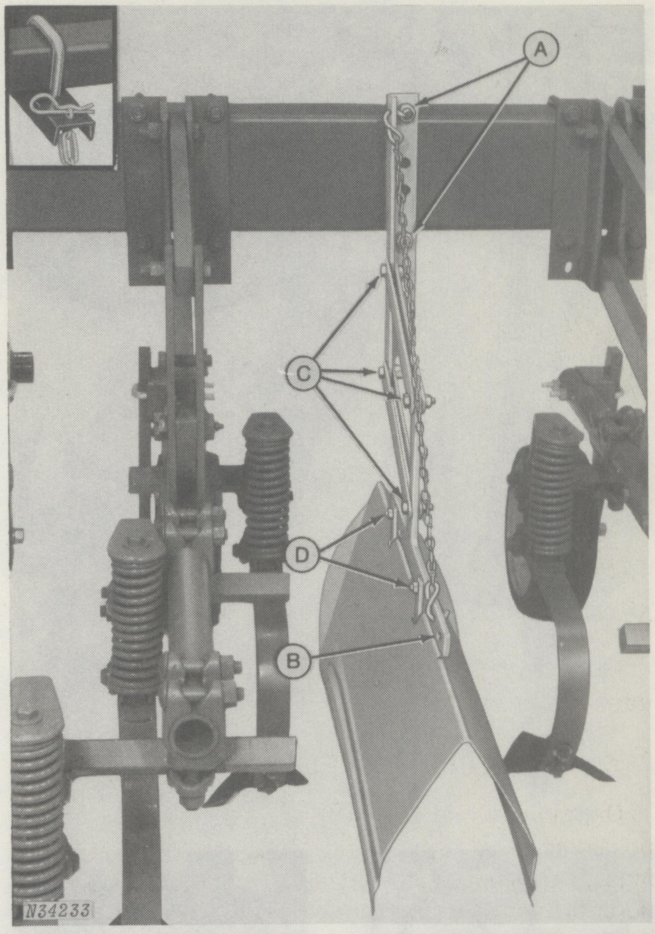
Eight-Row Beet and Bean (28-30 Inch [0.71-0.76 m] Rows)

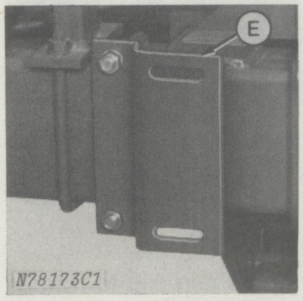
Twelve-Row Sweep (36-40 Inch [0.91-1.02 m] Rows)

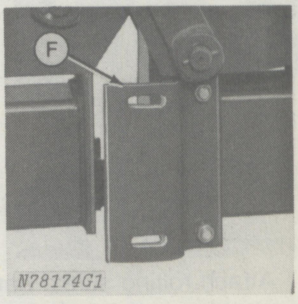
Twelve-Row Beet and Bean (28-30 Inch [0.71-0.76 m] Rows)

Sixteen-Row Beet and Bean (28-30 Inch [0.71-0.76 m] Rows)

HOODED SHIELDS







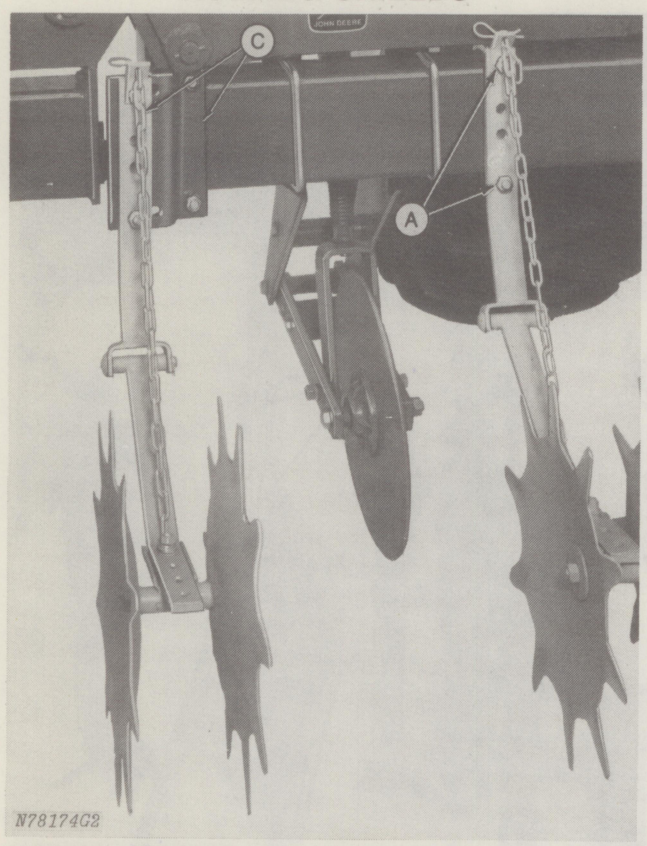
Attach hooded shields to the frame bar between rig hangers as shown at "A", and support with a chain from top of hanger to rear of shield support strap at "B". See inset for method of attaching shield lift chain to shield lift arm for split rockshaft lift operation. Use the brackets shown at "E" and "F" to attach the shields located in the area between the main frame and outriggers and when the folding cylinder anchor brackets interfere with the location of the shield.

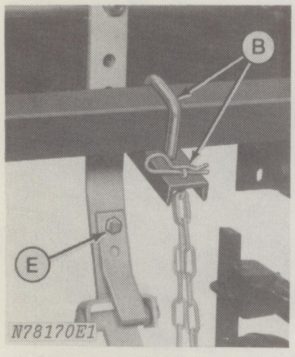
Attach S-hook to chain and shield as needed to obtain desired ground clearance.

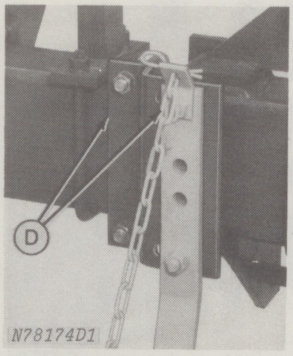
Adjust shield for side sway at "C". Loosen nuts to allow shield to swing; tighten for more rigidity.

Place shield between shovels or sweeps so plants receive the most protection. Position shield forward or rearward on strap using bolts at "D".

ROLLING SHIELDS







Attach rolling shield hanger and chain clip to frame bar between rig hangers as shown at "A", and support with chain. Use the brackets shown at "C" and "D" to attach the shields located in the area between the main frame and outriggers and when the folding cylinder anchor brackets interfere with the location of the shield.

Refer to "B" for method of attaching shield lift chain bracket on cultivators with split rockshaft.

Install stops at "E" on shield hangers located on outriggers.

Assemble rolling shields to hub, with large flat washers on outside of shields.

For vertical adjustment, move chain up or down in chain bracket.

Chain must have enough slack when cultivator is lowered to allow shields to roll freely over varying ground contours.

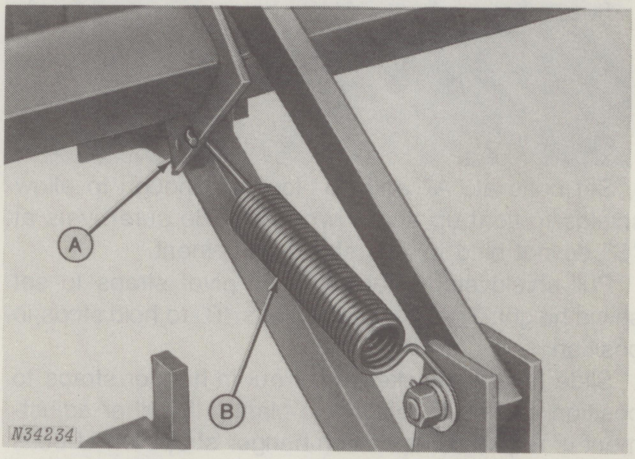
For fore-and-aft adjustment, remove adjusting bolt and move bracket to other attaching holes.

Shield may be repositioned by turning it around and bolting in one of the attaching holes.

DOWN-PRESSURE SPRINGS

Use down-pressure springs to hold cultivating tools in the ground, particularly when soil is dry or packed.

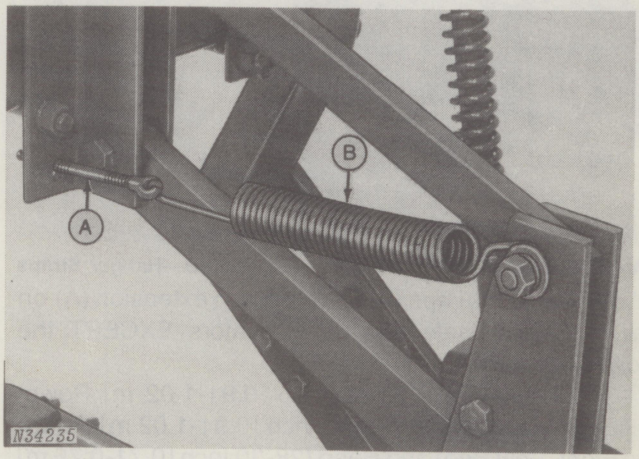
Also, refer to page 30, "Adjusting Tilt of Sweeps," for method of setting sweep angle for better penetration of the soil.



A—Down Pressure Arm **B—Spring**

Down Pressure Springs with Split Rockshaft Lift

Adjust down pressure by placing spring hook in upper or lower hole in down pressure arm (A). Lower position increases pressure.

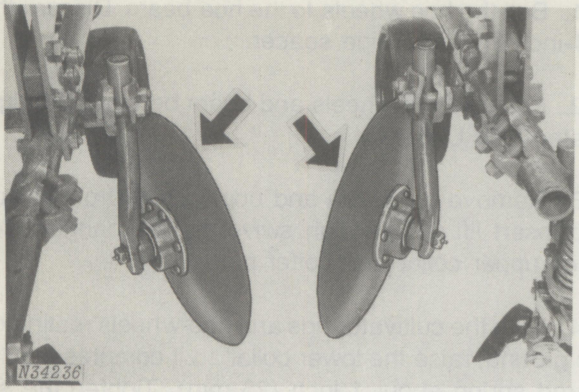


A—Eyebolt **B—Spring**

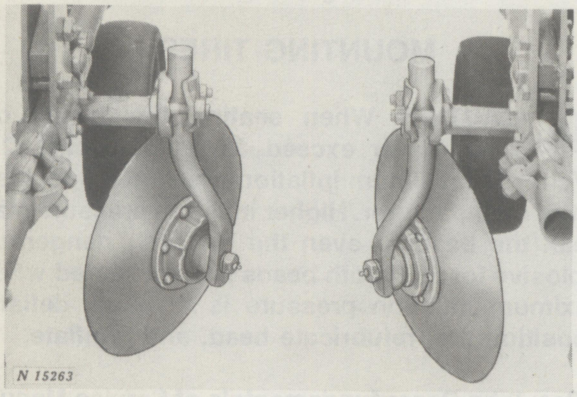
Down Pressure Springs without Split Rockshaft Lift

Adjust down pressure by turning nut on eyebolt (A) in front of rig hanger. Clockwise rotation of nut increases pressure.

DISK HILLERS



Hilling



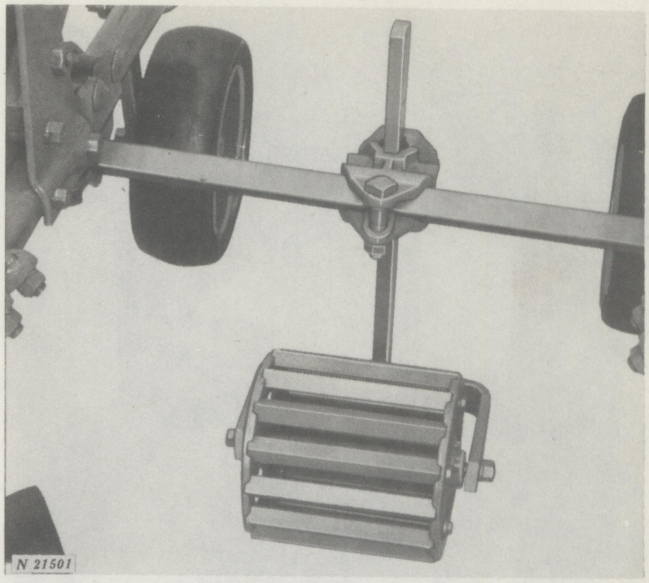
Barring Off

Use disk hillers in place of sweeps or shovels in the front position to fill or bar off the rows.

For hilling, set disks so shanks angle forward and toward rig pipes as in top illustration above.

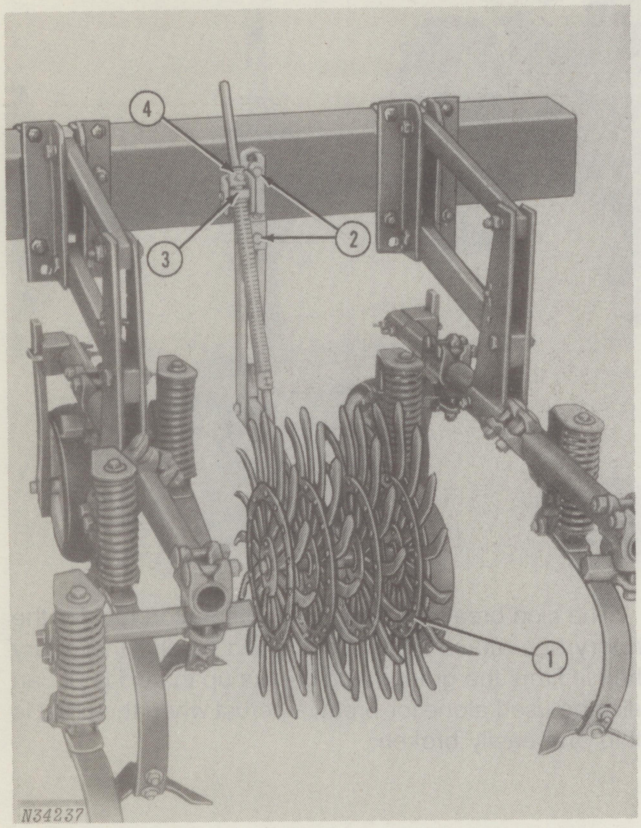
For barring off, set disks so shanks angle forward and away from rig pipes.

CLOD BREAKER



The clod breaker is the ideal companion tool for the rotary hoe attachment. When used behind the rotary hoe, it firms the ground and breaks up the clods. It can also be used alone for breaking crust when the crust is thin and easily broken.

ROTARY HOE ATTACHMENT



The rotary hoe attachment fits between the cultivator rigs, directly over the row.

When cultivating, set the upper collar on the hoe lift rod so there is at least a 1-inch (25 mm) space between the collar and the swivel. Adjust the lower collar to keep the spring under tension. Raise the lower collar to increase spring tension.

When crop is higher, remove the two inner hoe wheels and use the outer hoe wheels as plant shields.

To remove the inner hoe wheels, remove the long hub bolt and hubs with wheels from the hoe beam. Remove the inner wheels from the hubs. Replace hubs and long hub bolt on the hoe beam.

The hoe wheels are shown in the mulching position, with hoe tines pointed forward. If a packing effect is desired, reverse the hoe wheels so the tines point backward.

Installation

1. Bolt the hoe wheels to the hoe beam. Discard the 3/4-inch (19 mm) pipe spacer.

2. Position hoe wheels and beam between the rigs. Fasten with U-bolts.

3. Remove cotter pin and upper collar from lift rod and insert lift rod through swivel in hoe hanger. Replace upper collar and cotter pin.

4. With the cultivator rigs and hoe wheels resting on the ground, raise the lower collar so it compresses the lift rod spring about 1 inch (25 mm). Tighten the set screw. Position the upper collar about 1 inch (25 mm) above the swivel and tighten the set screw.

MOUNTING TIRES

CAUTION: When seating tire beads on rims, never exceed 35 psi (2.5 bar) (2.5 kg/cm²) or maximum inflation pressures specified by tire manufacturer. Higher inflation pressure may break the bead or even the rim with dangerous explosive force. If both beads are not seated when maximum inflation pressure is reached, deflate, reposition tire, relubricate bead, and reinflate.

See John Deere fundamentals of Service Manual 55 for additional information on tire mounting.

Tire Inflation

The correct inflation pressure for the lift assist wheel and gauge wheel tires is 35 psi (2.5 bar) (2.5 kg/cm²).

TIGHTENING HARDWARE

IMPORTANT: Tighten all hitch and mast brackets, bolts, and U-bolts after the first 10-15 hours of operation. Tighten 5/8-inch hardware to 170 ft-lbs (230 Nm) (23 kgm) and 3/4-inch hardware to 300 ft-lbs (407 Nm) (41 kgm) as shown in torque value chart on page 69.

Lubrication

CAUTION: To avoid injury, always stop tractor, lower cultivator, and stop tractor engine before lubricating implement.

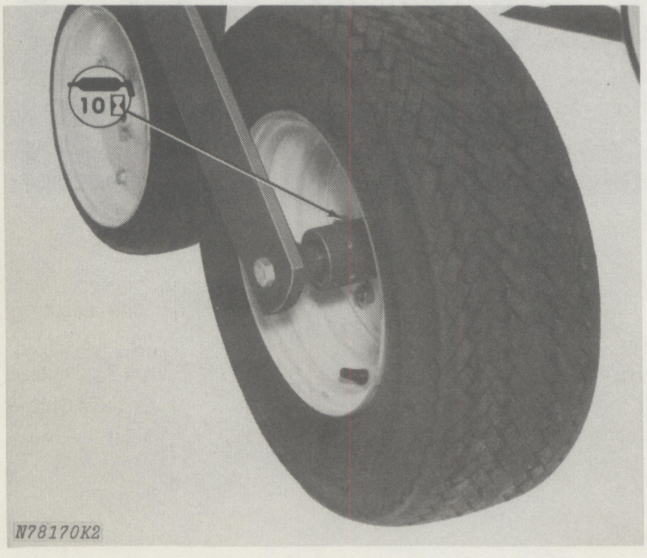
Lubricate all moving parts and pivot points. All parts should work smoothly. Make sure grease fittings are firmly installed and free of dirt before lubricating.

SYMBOLS

Lubricate with John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease at hourly intervals indicated on the symbols.

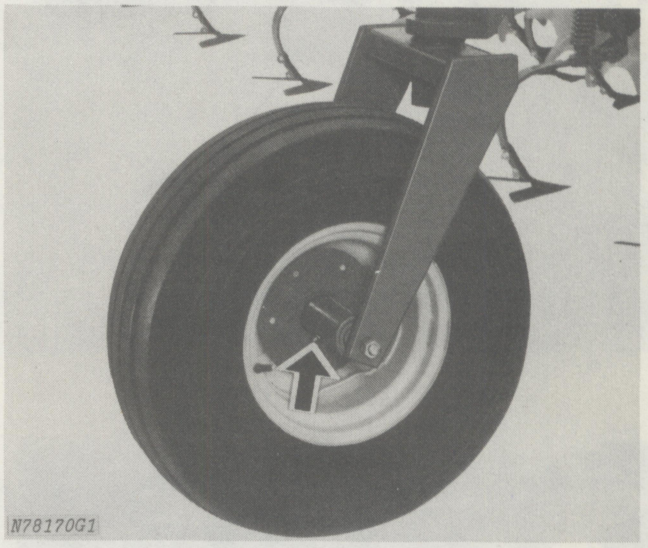
NOTE: The above symbol is representative of a grease-gun type of fitting, indicating the average interval between greasing functions in hours under normal conditions. Refer to the following illustrations for locations and recommended lubrication intervals.

FRAME GAUGE WHEELS



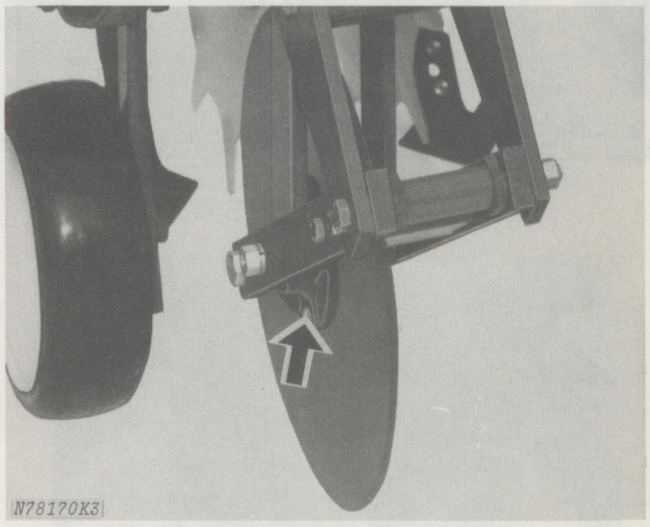
N78170K2

LIFT ASSIST WHEEL


N78170G1

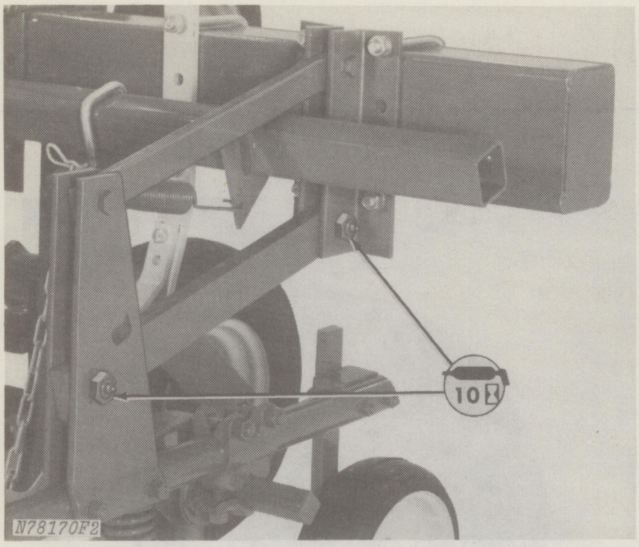
Lubricate after every ten hours of transport time with John Deere Multi-Purpose lubricant or an equivalent SAE multipurpose-type grease.

COULTER

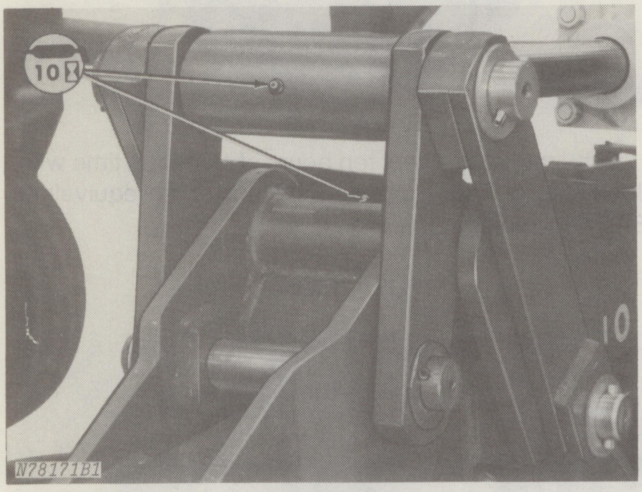

N78170K3

Lubricate at the beginning of each season with John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease. Fill and flush bearings with same type grease at the end of each season to keep moisture out.

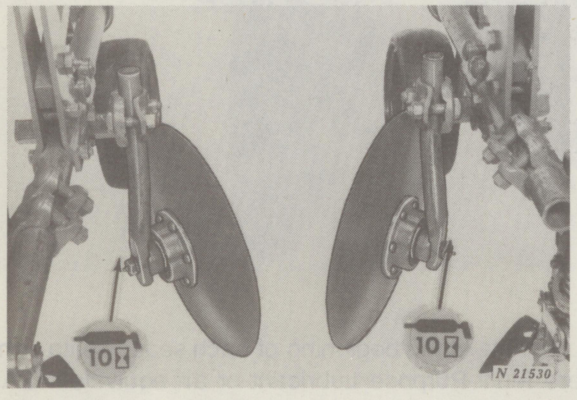
RIG LINK STUDS



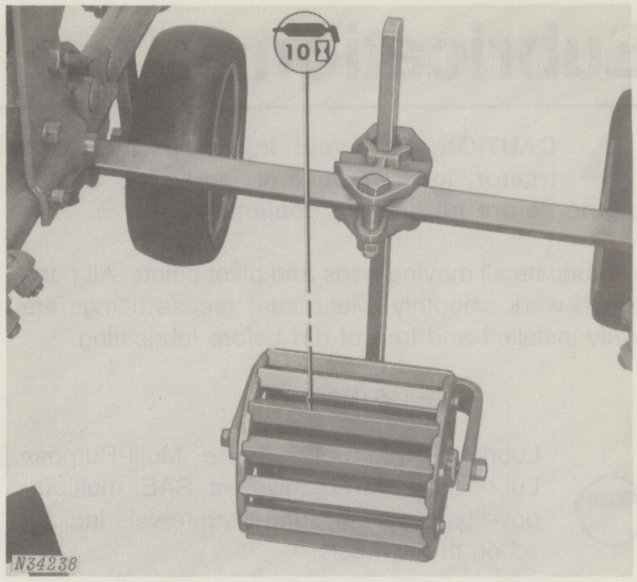
OUTRIGGER HINGES



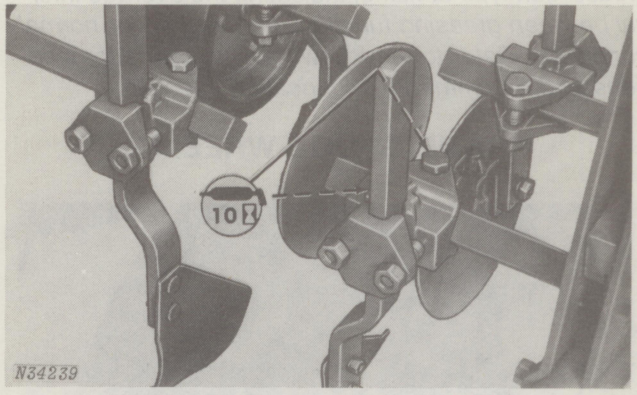
DISK HILLERS



CLOD BREAKER



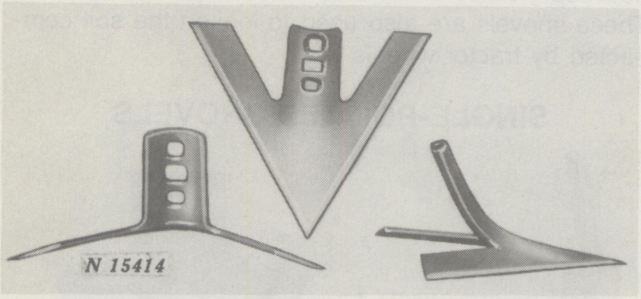
DISK WEEDERS



Sweeps, Shovels and Shanks

TRIP SHANK SWEEPS

John Deere sweeps and shovels are made from high carbon steel and heat treated to assure hardness for longer wear and toughness for greater shock resistance. A wide variety of sizes is available to meet your own needs.



High Crown

High crown sweeps throw a medium amount of soil, even at slow speeds, and leave a loose, mulched mellow topsoil.

These sweeps have a high-wing angle, high broad crown, and a wide shank.

Medium Crown

Medium crown sweeps are designed for high-speed cultivation. They are highly polished and will scour in all types of soil conditions.

These sweeps have a low-wing angle, a medium crown, and long, narrow shank.

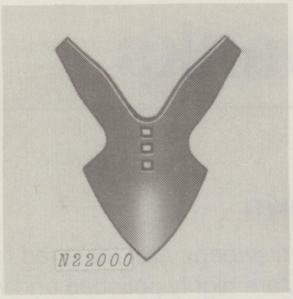
The sweeps lift and stir the top soil, leaving a loose mulch on top while destroying the weeds.

Low Crown

Low crown sweeps are designed to move a minimum amount of soil, even at high cultivating speeds.

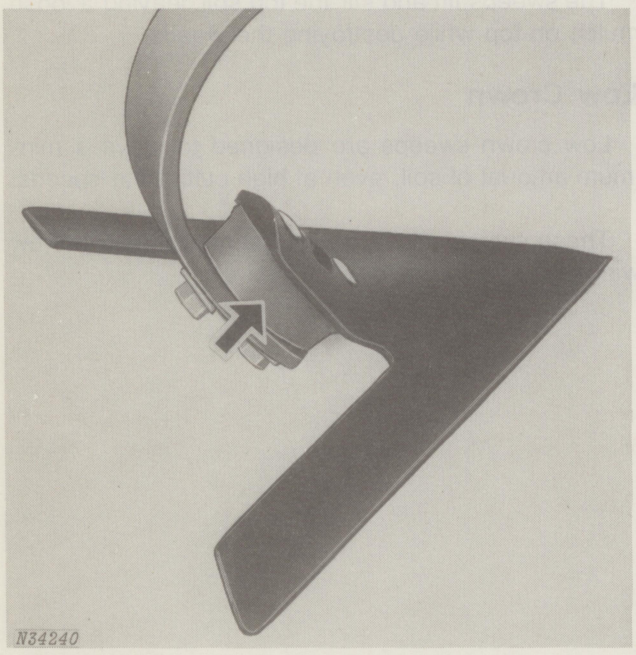
These sweeps have a very narrow shank, narrow wings, and low crown.

FURROW OPENERS



Furrow Openers are used for making irrigation ditches, and for cleaning out irrigation trenches.

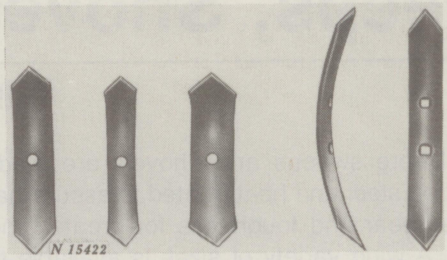
FILLER BLOCK



Use filler block on Quick-Return Spring-Trip Shank to reduce build-up of dirt on shank or sweep, under certain soil conditions.

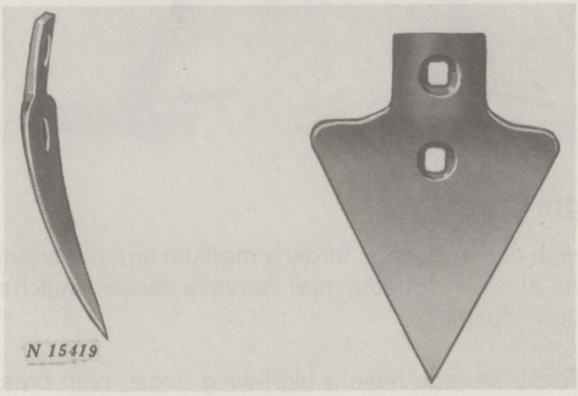
NOTE: Several sizes of sweep bolt sets are available for attaching sweeps, shovels and openers.

DOUBLE-POINTED SHOVELS



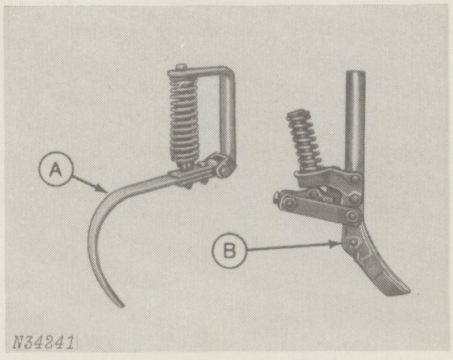
Double-Pointed Shovels are ideal for use where it's necessary to cultivate deep to stir up more ground. These shovels are also used to loosen the soil compacted by tractor wheels.

SINGLE-POINTED SHOVELS



Single-Pointed Shovels or Spear Points are particularly suitable for working in conditions where extreme care must be taken not to injure plants. These shovels are ideal for killing weeds and do an excellent job of cultivating in row-crops.

SHANKS



A—Quick-Return Spring-Trip Shank

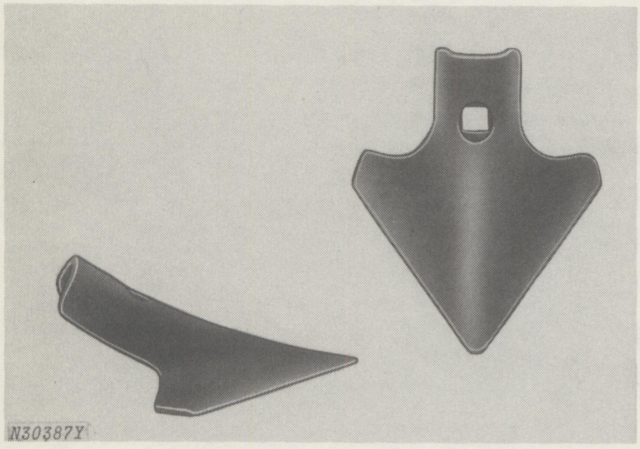
B—Quick-Adjustable Spring-Trip Shank

Quick-Return Spring-Trip Shanks are regular equipment unless otherwise specified. Quick-Adjustable Spring-Trip Shanks are also available.

Shares and Shanks

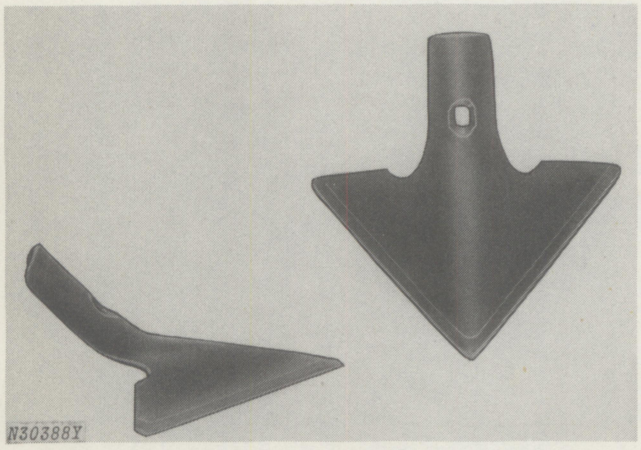
S-TINE SHANK SHARE CULTIVATORS

Row Crop Shares



Four-Inch Row-Crop Share

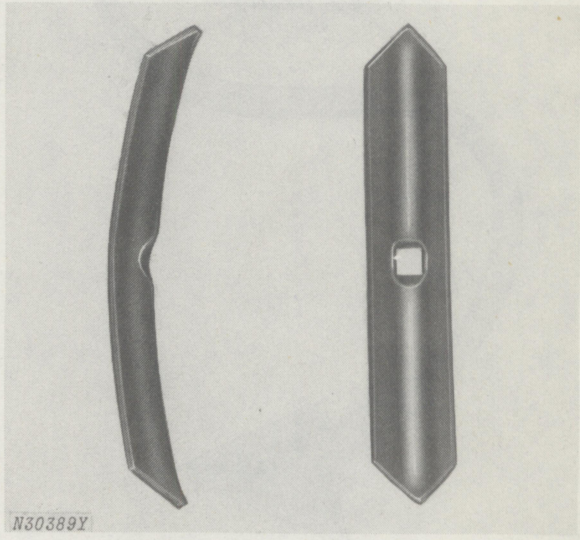
Four-inch (102 mm) row-crop shares have low-pitched wings for a good soil flow and eradicate weeds smaller shares miss.



Seven-Inch Row-Crop Share

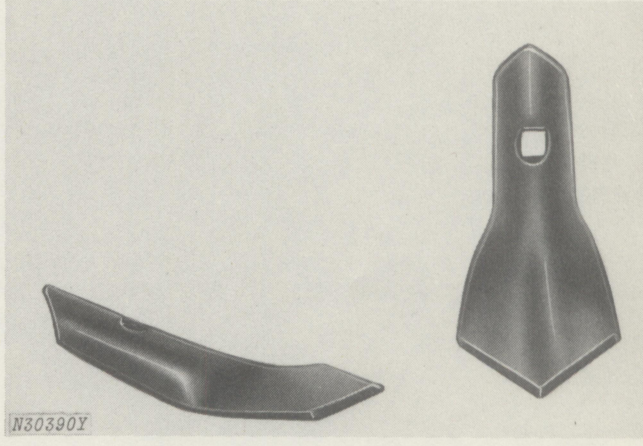
Seven-inch (178 mm) row crop shares have a high broad crown for lifting the soil and leaving a loose mulch on the surface.

Reversible Share



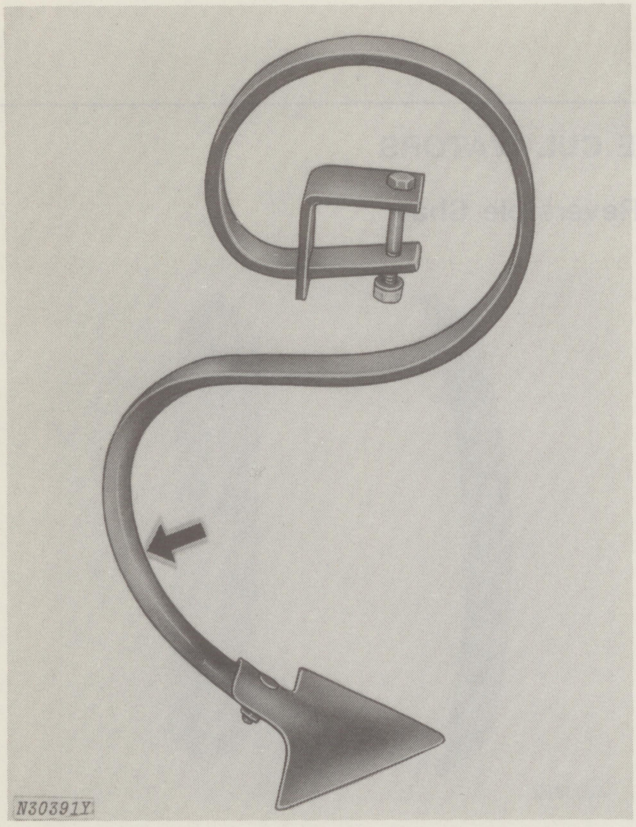
The 1-3/8 x 7-inch (35 x 178 mm) reversible share is ideal for shattering surface crust and for deep cultivation to stir up the soil and dig up small surface weeds.

Goosefoot Share



Two and one-half inch (64 mm) goosefoot shares are used to shatter top soil crust and destroy small surface weeds.

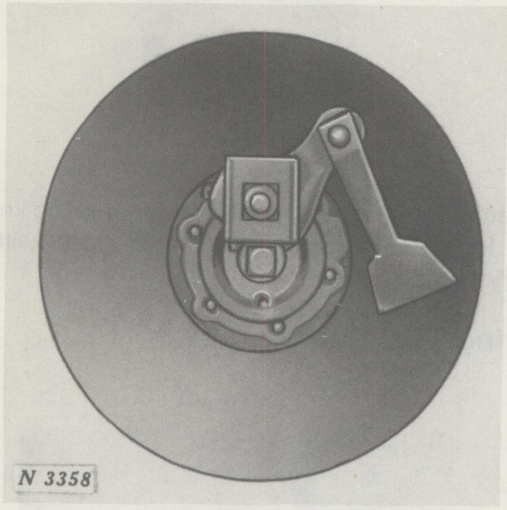
S-Tine Shank



The S-tine shank is used with the row-crop, reversible, and goosefoot shares. They give a vibrating action which aids in shattering crust and exposing weed roots to the sun.

Tool Equipment for Beet, Bean, and Vegetable Cultivation

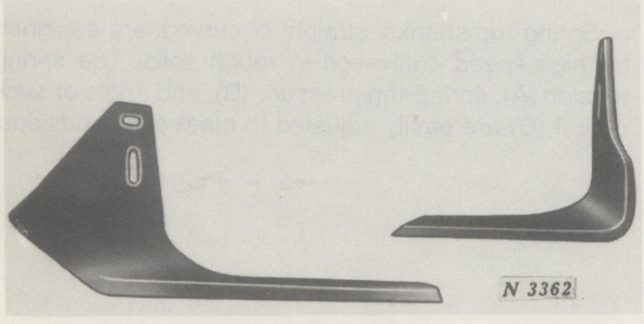
DISK WEEDERS



Disk weeders are available in 9 and 11-inch (229 and 279 mm) sizes, with adjustable scrapers and anti-friction or plain bearings.

WEEDING KNIVES

Round-Turn Knives



Round-turn weeding knives are shaped to prevent damage to shallow crop roots. Their upward pitch assures good work in crusted soils. Made of tough, high-carbon steel, round-turn knives are available in three (6 to 10-inch) (152 to 254 mm) sizes.

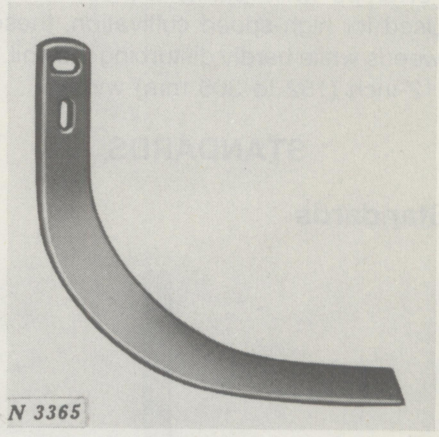
Low-Point Knives

6 and 8-inch (152 and 203 mm) low-point knives are made for very close work in young crops. The backward slope of the point lifts leaves up and out of the way to prevent plant damage.

Square-Turn Knives

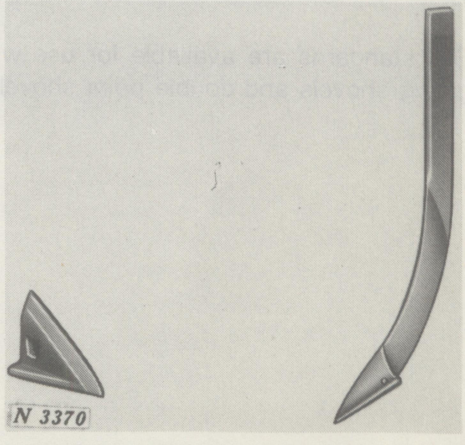
Square-turn knives cut readily through soils packed by rain or irrigation. Bolt slots permit extremely flat adjustment to prevent ridging. Available in 6-inch and 8-inch (152 and 203 mm) sizes.

Bed Knives



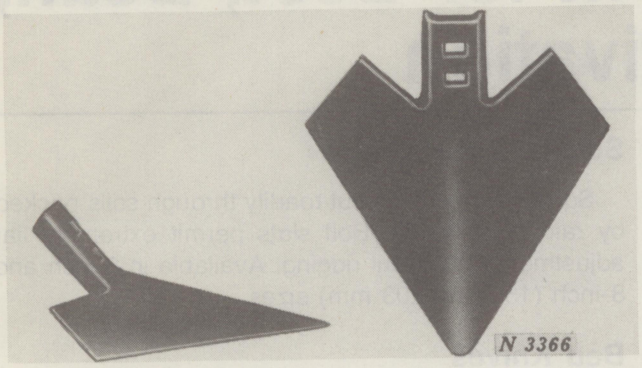
Bed knives quickly and easily destroy heavy weed growth. The 1/4-inch (6.4 mm) thick knives have two attaching slots. Available in 6-inch (152 mm) size only.

SPEAR POINTS



Spear points with standards are available for crust-breaking, deep cultivation, or deep hardpan-breaking. The front edge of the standard, just above the point, is beveled for better penetration and less soil resistance.

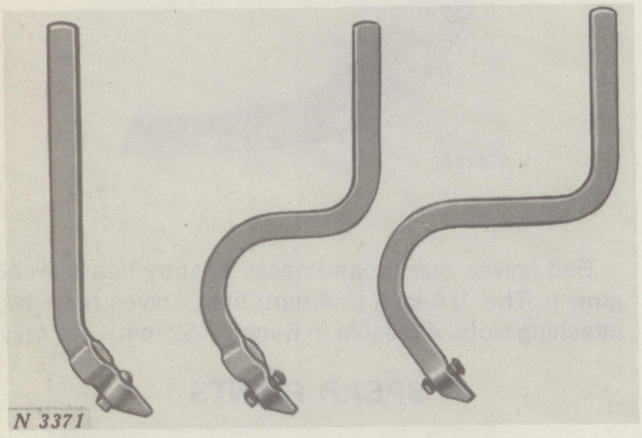
SWEEPS



Extra-flat duckfoot sweeps are used for early cultivation of crops while plants are still in the seeding stage. Used for high-speed cultivation, these sweeps will cut weeds while hardly disturbing the soil. Available in 6 to 12-inch (152 to 305 mm) widths.

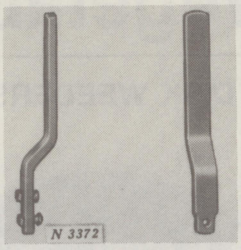
STANDARDS

Stiff Standards



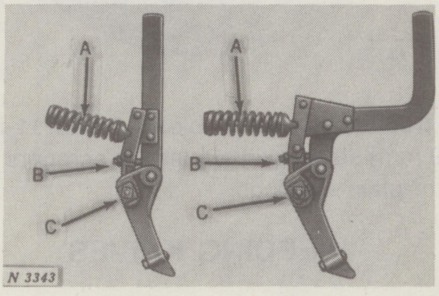
Stiff standards are available for use with sweeps, irrigating shovels and double point shovels.

Offset Standards



Use the offset standard at left with weeding knives or bed knives. Standard at right is used with disk weeders.

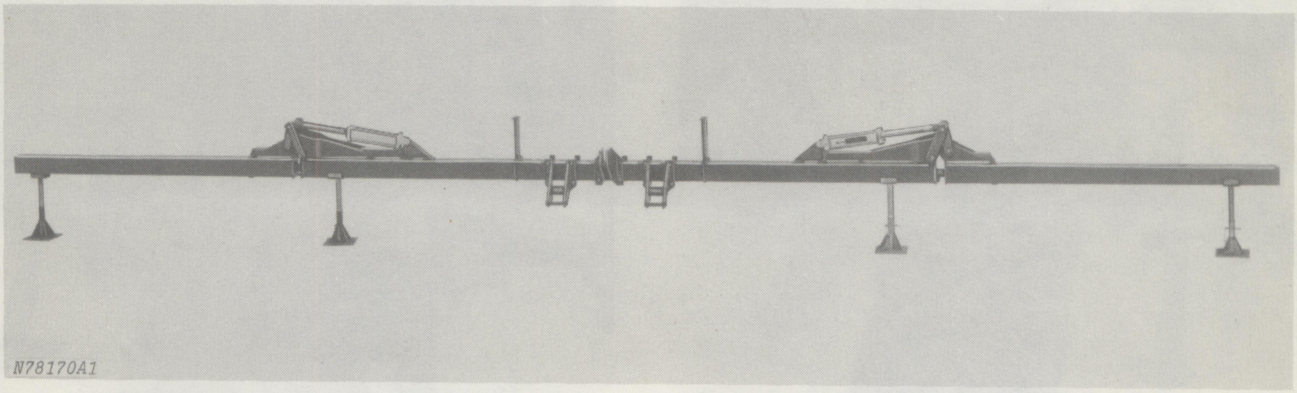
Spring-Trip Shanks



Spring-trip shanks, straight or curved, are designed for high-speed cultivation in rough soils. The spring tension (A), spring-trip pressure (B), and angle or suck of tool (C) are easily adjusted to meet soil conditions.

Assembly

MAIN FRAME



CAUTION: Fully assembled the cultivator can weigh more than 7200 pounds (3 269 kg). Be sure stands used to support the frame are strong enough to carry the weight of the completed assembly and are securely positioned to prevent tipping or sliding. Never work directly beneath the main frame or mounted attachments during assembly.

IMPORTANT: During assembly, tighten the bolts to the torque values specified in the torque value chart on page 68.

1. Remove banding and wires.

2. Remove cap plugs from hydraulic cylinder ports.

CAUTION: Injury can result by flying cap plugs when manually operating hydraulic cylinders with cap plugs still in their ports.

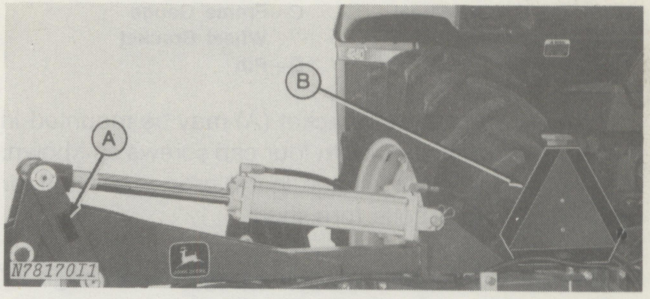
3. Unfold the outriggers.

4. Raise the frame with a hoist or lift truck and place on stands approximately 28 inches (711 mm) high. Remove lifting device.

Mast and Hitch Pin Brackets

Check mast and hitch pin brackets for location and correctness of hitch ball and spacers, and spacing of brackets. Adjust as necessary to match requirements of tractor. (See pages 9 and 10).

SMV Emblem and Safety Reflectors



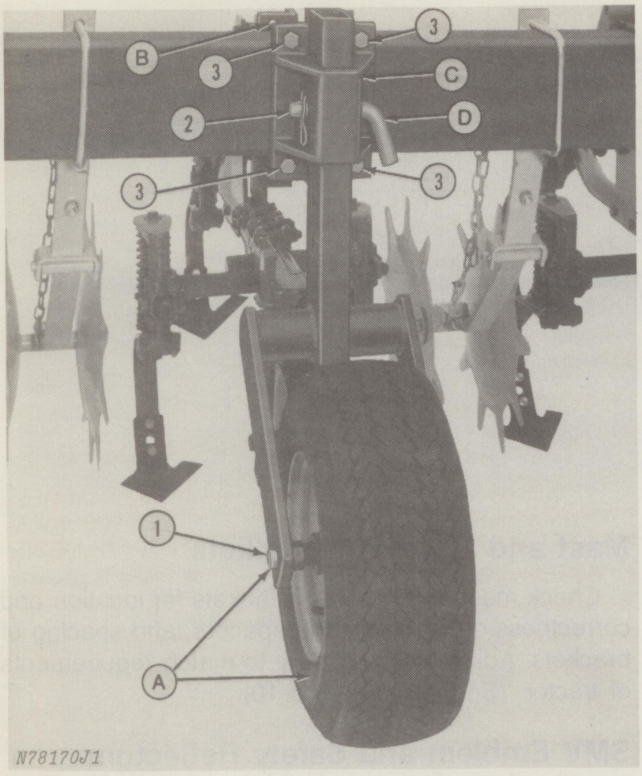
A—Reflector **B—SMV Emblem**

Install a red reflector (A) on the rear link of the right-hand and left-hand hinge assemblies, and an amber reflector on the front link of the left-hand hinge assembly.

Install the SMV emblem (B) on the left hand outrigger support with two 3/8-inch self tapping screws.

WHEELS, RIGS AND ATTACHMENTS

Frame Gauge Wheels



A—Frame Gauge Wheel
B—Rig Hanger
C—Frame Gauge Wheel Bracket
D—Pin

Frame gauge wheel bracket (A) may be mounted in front of a rig hanger (B) with four cap screws as shown. If a rig hanger is not located in the proper position for mounting, use U-bolts furnished.

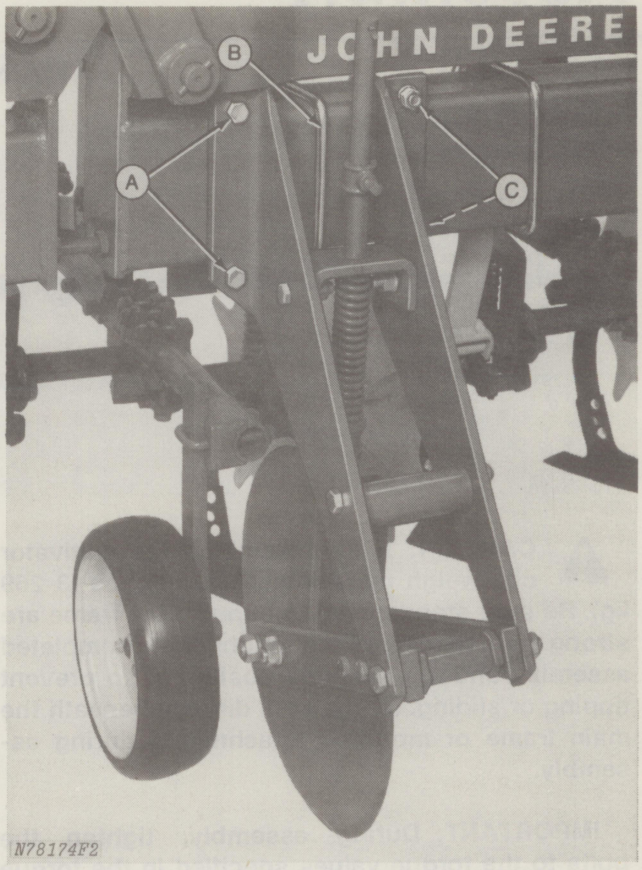
Refer to appropriate diagram, pages 16 through 27 for gauge wheel location.

1. Install gauge wheel (A) in yoke.

2. Attach gauge wheel with bracket to frame.

NOTE: Install spacer between frame and frame gauge wheel bracket on 12-row cultivators with 28, 30, and 32-inch [0.71, 0.76, and 0.81 m] row spacing and tractors with dual wheels.

Coulters



A—Rig Hanger Attaching Bolts
B—Rig Hanger Attaching U-Bolt
C—Coulter Attaching U-Bolt

Refer to appropriate diagram, pages 16 through 27 for coulter location.

Cultivators EXCEPT Double Rig Sweep—Install coulter on frame using the attaching bolts (A) and U-bolts (C) as shown above.

Double Rig Sweep Cultivators EXCEPT 12-Row, 40-Inch (1.02 m) Spacing—Install coulter on frame using rig hanger bolts (A) in both (A) and (C) location.

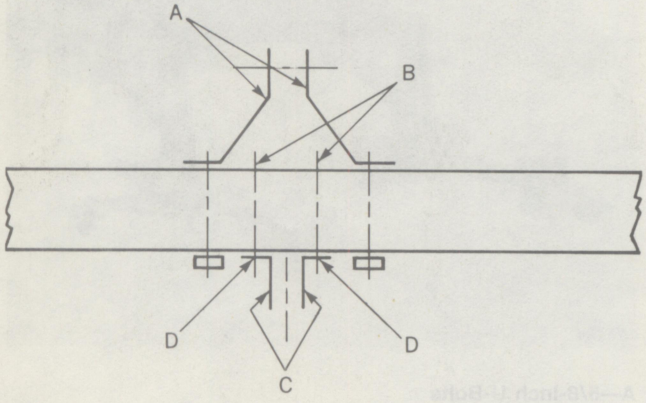
Double Rig Sweep Cultivator—12-Row, 40-Inch (1.02 m) Spacing—Install coulter on frame using rig hanger bolts and U-bolts as shown in diagram on page 21.

Rigs

Refer to row spacing diagrams on pages 16 through 27. Select the diagram appropriate to your cultivator for locating rig positions on frame.

Refer to the following for attaching rigs in location.

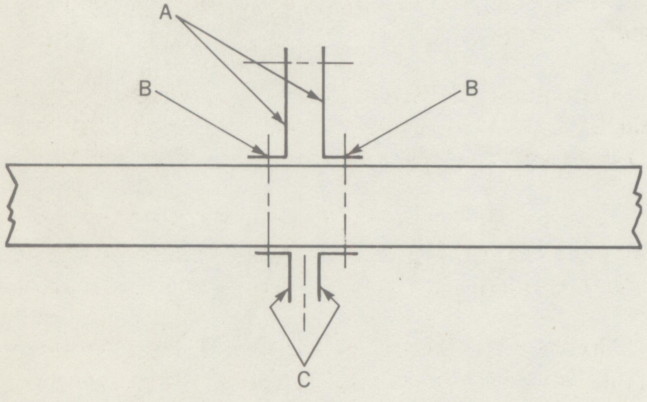
Center Rigs in Mast Area-For Cultivators without Lift Assist Wheel-with 28-32 Inch (0.71-0.81 m) Row Spacing and 5-Shank Single Rig 36-40 Inch (0.91-1.02 m) Row Spacing



N34242

A—Hitch Mast
B—5/8-Inch U-Bolts
C—Hangers with 13/16-Inch (21 mm) Attaching Holes
D—21/32 x 1-5/16 x .090-Inch Washers

28, 31, and 41-Foot
(8 534, 9 449, and 12 497 mm) Cultivators

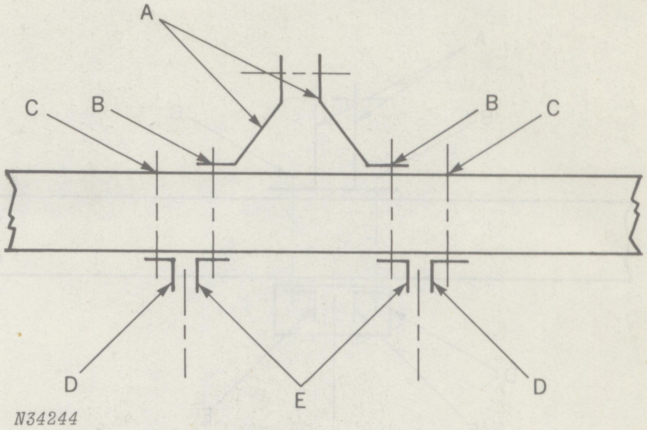


N34243

A—Hitch Mast
B—3/4 x 10-Inch Bolts
C—Hangers with 13/16-Inch (21 mm) Attaching Holes

21-Foot (6 401 mm) Cultivator

Center Rigs in Mast Area-For Cultivators without Lift Assist Wheel-with Double Rig 34-40 Inch (0.86-1.02 m) Row Spacing

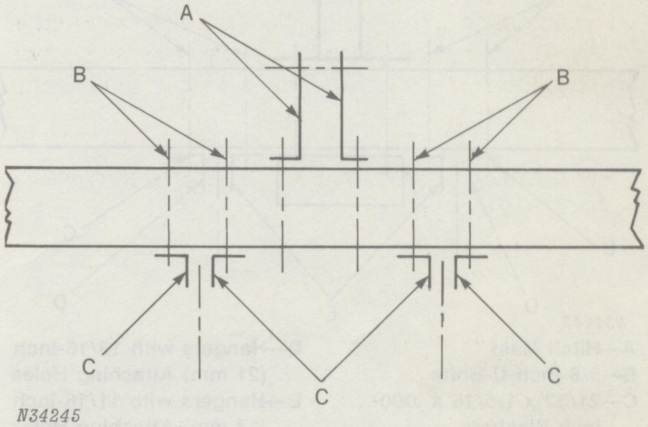


N34244

A—Hitch Mast
B—3/4 x 10-Inch Bolts
C—5/8-Inch U-Bolt
D—Hangers with 11/16-Inch (17 mm) Attaching Holes
E—Hangers with 13/16-Inch (21 mm) Attaching Holes

28, 31, and 41-Foot
(8 534, 9 449, and 12 497 mm) Cultivators

To obtain the rig hanger combination shown above, remove a hanger with 13/16-inch (21 mm) attaching holes and a hanger with 11/16-inch (17 mm) attaching holes from their respective rig assemblies and reinstall in the opposite assembly.

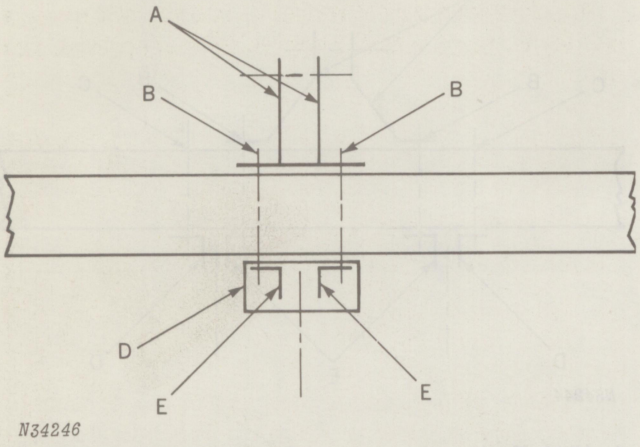


N34245

A—Hitch Mast
B—5/8-Inch U-Bolts
C—Hanger with 11/16-Inch (17 mm) Attaching Holes

21-Foot (6 401 mm) Cultivator

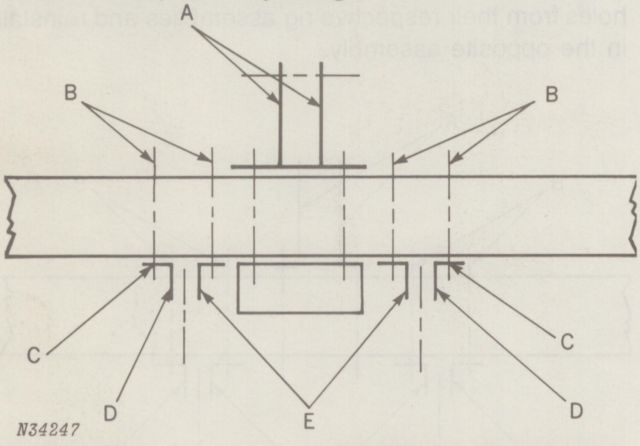
Center Rigs in Mast Area-For Cultivators with Lift Assist Wheel, 28-30 Inch (0.71-0.76 m) Row Spacing, or 5-Shank Single Rig 34-40 Inch (0.86-1.02 m) Row Spacing



A—Hitch Mast
B—3/4 x 10-Inch Bolts
C—Hangers with 13/16-Inch (21 mm) Attaching Holes
D—Lift Assist Wheel Bracket

28, 31, and 41-Foot
(8 534, 9 449, and 12 497 mm)

Center Rigs in Mast Area-For Cultivators with Lift Assist Wheel and Double Rig 34-40 Inch (0.86-1.02 m) Row Spacing



A—Hitch Mast
B—5/8-Inch U-Bolts
C—21/32 x 1-5/16 x .090-Inch Washers
D—Hangers with 13/16-Inch (21 mm) Attaching Holes
E—Hangers with 11/16-Inch (17 mm) Attaching Holes

28, 31, and 41-Foot
(8 534, 9 449, and 12 497 mm) Cultivators

To obtain the rig hanger combination shown above, remove a hanger with 13/16-inch (21 mm) attaching holes and a hanger with 11/16-inch (17 mm) attaching holes from their respective rig assemblies and reinstall in the opposite assembly.

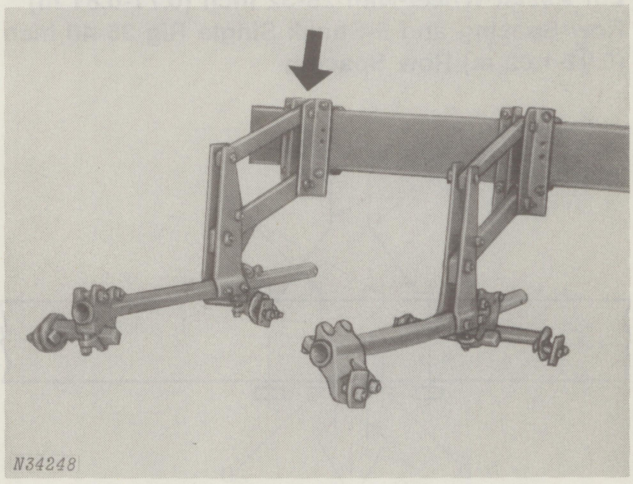
Rigs Mounted Behind Frame Gauge Wheels

See pages 16-27 and page 46.

Rigs Mounted Behind Guide Coulters

See pages 16-27 and page 46.

Rigs Mounted Directly to Frame with U-Bolts

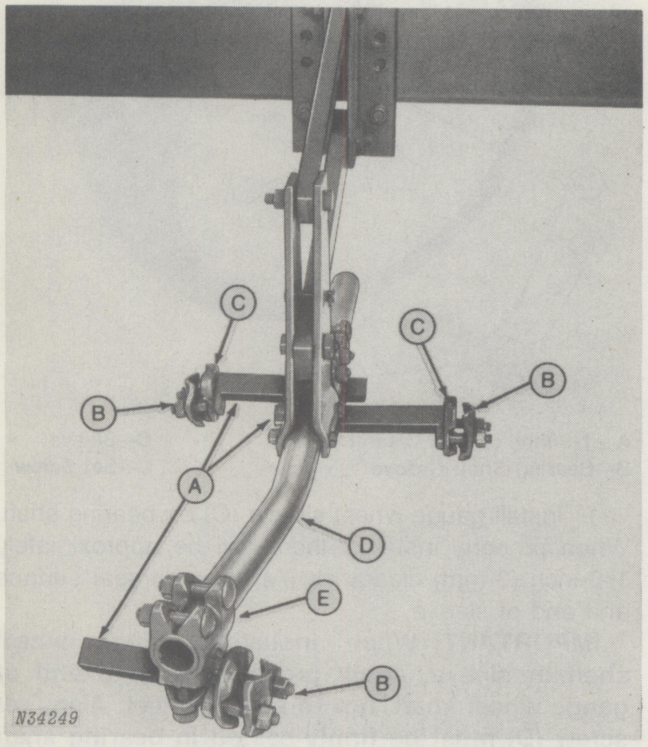


A—5/8-Inch U-Bolts

Attach rigs to frame as shown with 5/8-inch U-bolts.

CROSSARMS, CLAMPS, SHANKS AND SWEEPS FOR TRIP SHANK SWEEP CULTIVATORS

Crossarms and Clamps



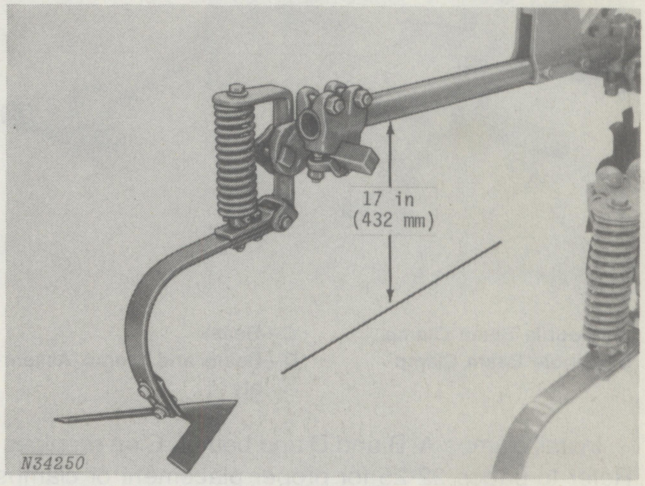
A—Crossarms
B—Shank Clamps
C—Short Side of Clamp
D—Rig Pipe
E—Crossarm Clamp

Refer to pages 16 through 27 for proper placement of clamps and crossarms. See page 29 for positioning of crossarms in clamps.

Shanks and Sweeps

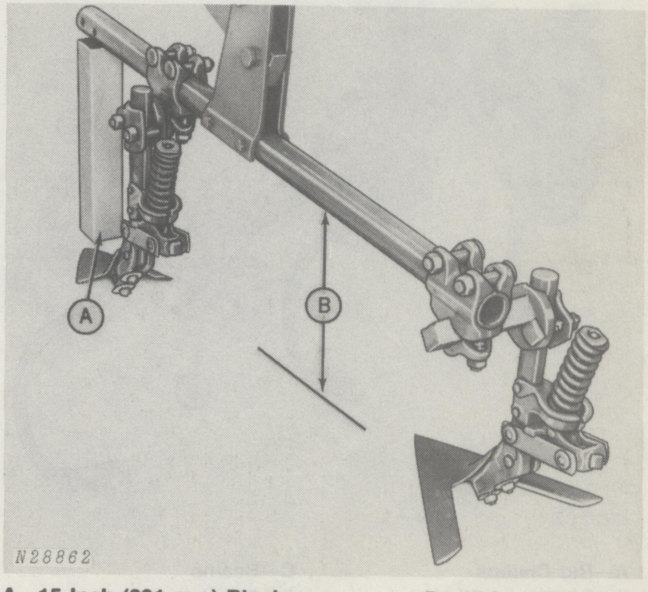
Before assembling shanks on rigs, refer to pages 16 through 27 for proper placement of clamps and crossarms.

Attach shovels or sweeps to shanks, then install shanks in clamps. See page 30 for sweep tilt adjustment.



Sweep Cultivator with Quick-Return Spring-Trip Shanks

Use a 17-inch (432 mm) block under rig beam to set height for Quick-Return Spring-Trip Shanks.



A—15-Inch (381 mm) Block **B—15-Inch (381 mm)**

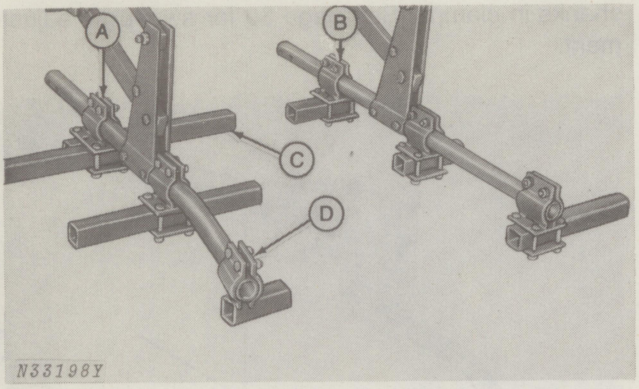
Sweep Cultivator with Quick-Adjustable Spring-Trip Shanks

Use a 15-inch (381 mm) block (A) under rig beam to set height for Quick-Adjustable Spring-Trip Shanks.

NOTE: It may be necessary to adjust center link on tractor to obtain equal measurements along the length of the rig beam.

BEAMS, CLAMPS, SHANKS AND SHARES FOR S-TINE SHARE CULTIVATORS

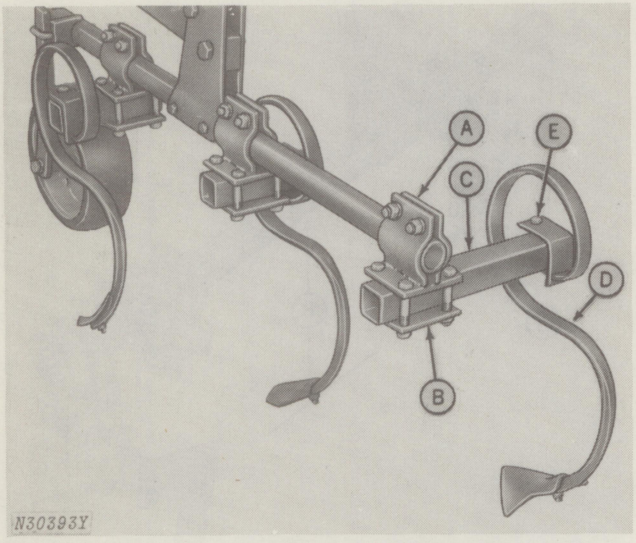
Clamp and Beams



A—Double Beam Clamp
B—Single Beam Clamp
C—Beam
D—Beam and Clamp Assembly

Install clamps A, B and D and beams C on rig pipes. Refer to pages 22-25 for proper placement of clamps and beams.

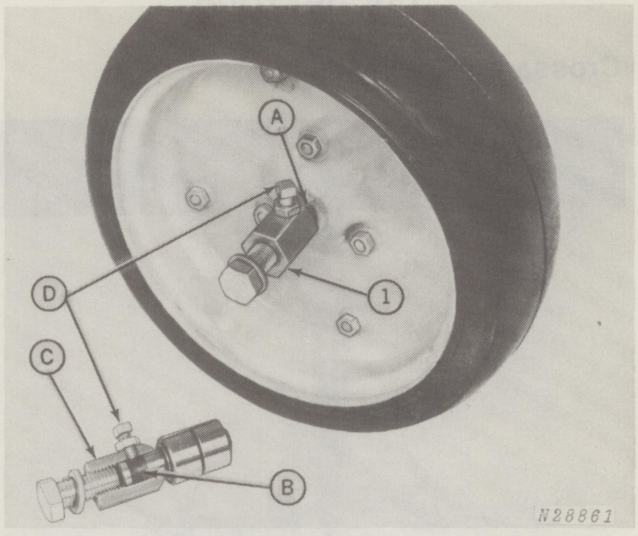
Shanks and Shares



A—Rig Clamps
B—Rig Clamp Plates
C—Beams
D—Shanks
E—Shank Clamp Bolt

Attach shares to shanks; then install shank onto beam. See page 30 for share tilt adjustment.

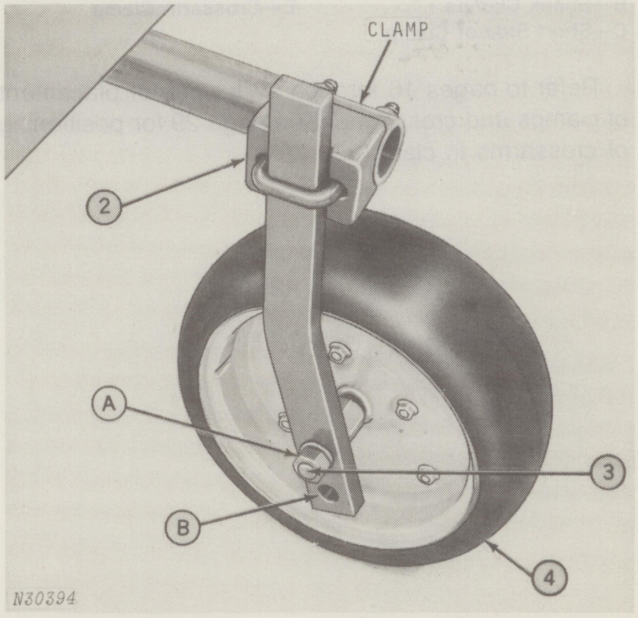
RIG GAUGE WHEELS



A—1/8-Inch (3 mm) Clearance
B—Bearing Shaft Groove
C—Sleeve
D—Set Screw

1. Install gauge wheel sleeve (C) on bearing shaft. When properly installed there will be approximately 1/8-inch (3 mm) clearance (A) between seal surface and end of sleeve.

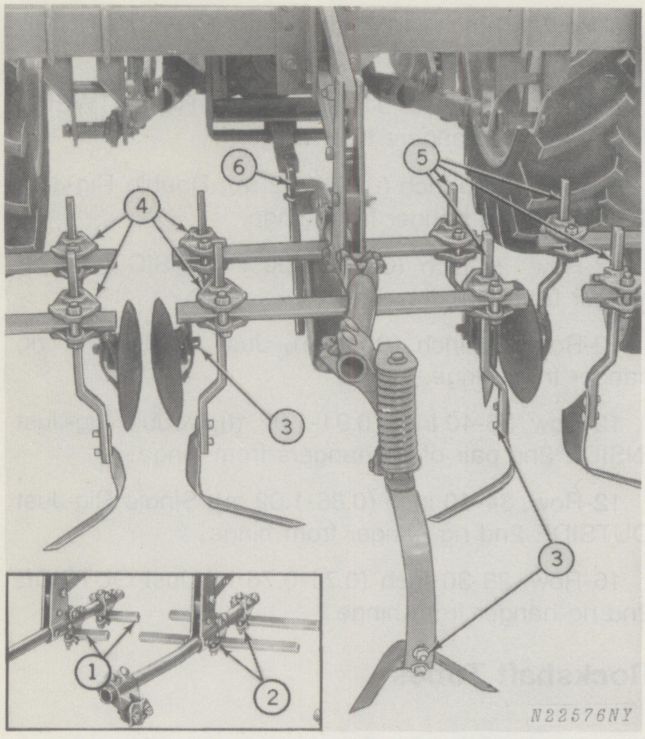
IMPORTANT: When installing gauge wheel shaft in sleeve, apply pressure only to end of gauge wheel shaft, not to gauge wheel. Also, set screw (D) must be firmly seated in bearing shaft groove (B). Tighten set screw (D) and lock nut.



A—Trip Shank Sweep Cultivator Position
B—S-Tine Shank Share Cultivator Position

2. Refer to row spacing diagrams for your particular cultivator for proper shank positioning. Assemble gauge wheel clamps and U-bolts to rig beams.

BEET, BEAN, AND VEGETABLE EQUIPMENT



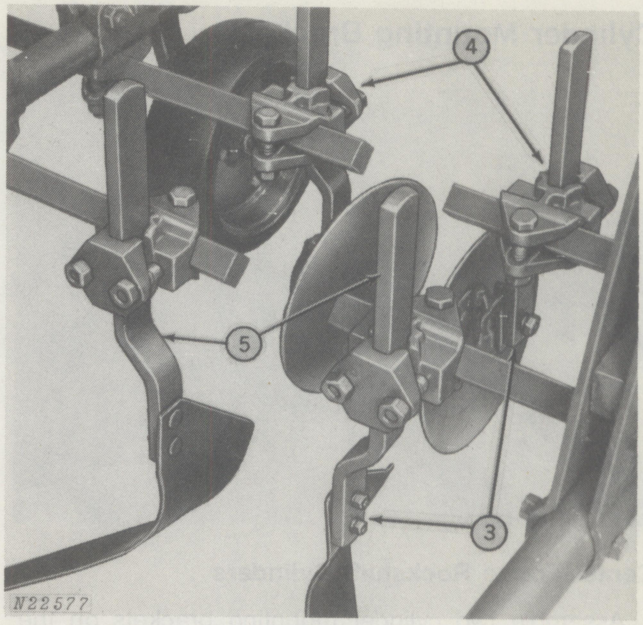
Bolt the rig clamps to the rig pipes.

Set the rigs on the frame bar for the desired row spacing.

1. Place the 9-inch (229 mm) bars in the rig clamps on the two outside rig pipes as shown in the inset above.

2. Place the 26-inch (660 mm) bars in the rig clamps on the inner rig pipes. Center the bars in the clamps.

NOTE: Use row spacing diagram, page 26, as a guide for initial location of rigs, crossarms, rig bars and shanks.



3. Bolt the desired tools to the shanks and standards.

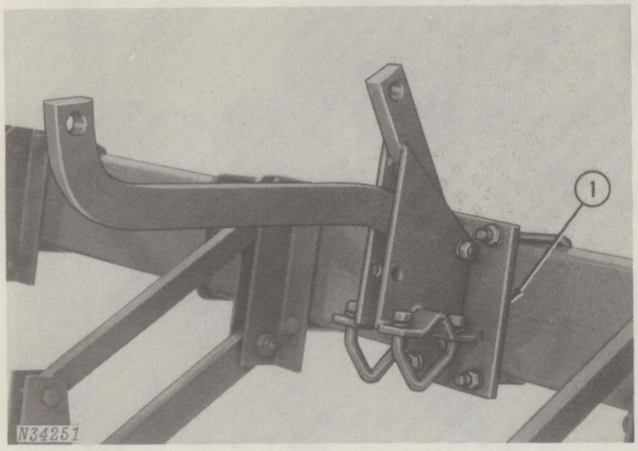
4. Slide the shank clamps on the rig bars.

5. Insert shanks and standards in the clamps.

6. Attach gauge wheel shank and clamp to rig beam. Refer to row spacing diagram, page 26.

SPLIT ROCKSHAFT LIFT ATTACHMENT

Cylinder Mounting Brackets



Center Frame Rockshaft Cylinders

Assemble two cylinder mounting brackets on the center frame of the following cultivators. Locate on each side of center of main frame as follows:

16-Row, 28-30 Inch (0.71-0.76 m)-Just OUTSIDE 2nd rig hanger on each side of center of center frame.

12-Row, 36-40 Inch (0.96-1.02 m), Double Rig-Just INSIDE 2nd pair of rig hangers on each side of center of center frame.

12-Row, 34-40 Inch (0.86-1.02 m), single Rig-Just INSIDE 2nd rig hanger on each side of center of center frame.

Assemble one cylinder mounting bracket on the center frame of the following cultivators. Locate on the left-hand side of center of center frame as follows:

8-Row, 36-40 Inch (0.91-1.02 m), Single Rig-Just INSIDE 1st rig hanger on left-hand side of center of center frame.

8-Row, 36-40 Inch (0.91-1.02 m), Double Rig-Just INSIDE 1st pair of double rigs on left-hand side of center of center frame.

12-Row, 28-30 Inch (0.71-0.76 m)-Just INSIDE 1st rig hanger on left-hand side of center of center frame.

Outrigger Rockshaft Cylinders

Assemble a cylinder mounting bracket on each outrigger frame.

Locate from the outrigger hinge as follows:

8-Row, 36-38 Inch (0.91-0.97 m), Single Rig-Just OUTSIDE 1st rig hanger from hinge.

8-Row, 40-Inch (1.02 m), Single Rig-Just INSIDE 1st rig hanger from hinge.

8-Row, 36-Inch (0.91 m), Double Rig-BETWEEN 1st pair of rig hangers from hinge.

8-Row, 38-40 Inch (0.97-1.02 m), Double Rig-Just INSIDE 1st rig hanger from hinge.

12-Row, 28-Inch (0.71 m)-Just OUTSIDE 1st rig hanger from hinge.

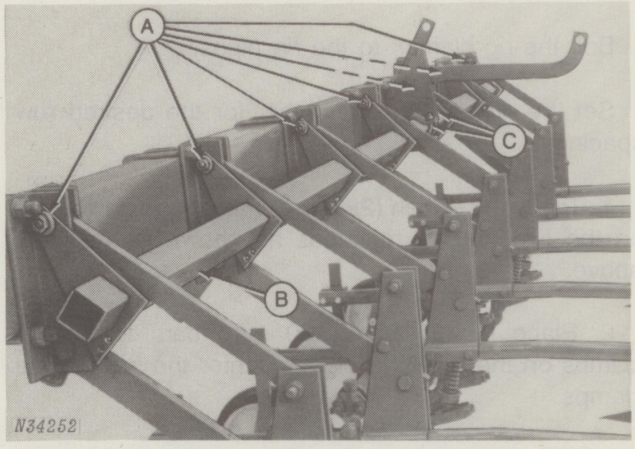
12-Row, 30-Inch (0.76 m), Just INSIDE 1st rig hanger from hinge.

12-Row, 36-40 Inch (0.91-1.02 m), Double Rig-Just INSIDE 2nd pair of rig hangers from hinge.

12-Row, 34-40 Inch (0.86-1.02 m), Single Rig-Just OUTSIDE 2nd rig hanger from hinge.

16-Row, 28-30 Inch (0.71-0.76 m)-Just OUTSIDE 2nd rig hanger from hinge.

Rockshaft Tubes



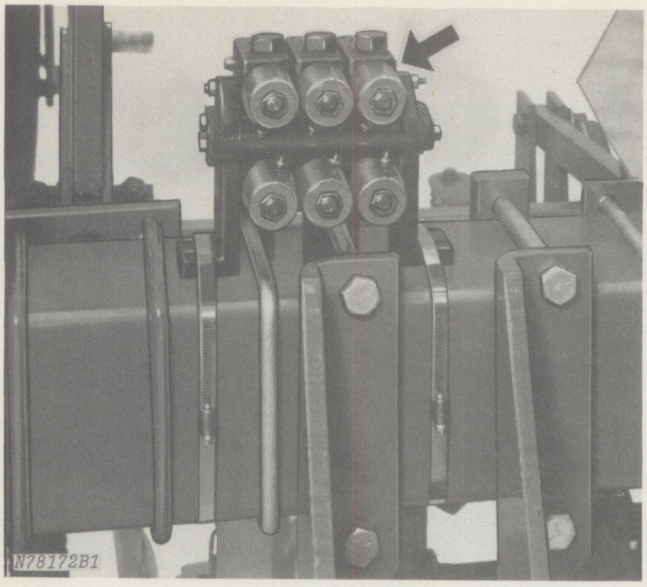
A—Rockshaft Arms
B—Rockshaft Tube
C—Cylinder Mounting Bracket U-Bolts

Assemble rockshaft arms (A) on top bolt of each rig hanger on center frame in the following sequence; pivot bushing, rockshaft arm, washer, lock washer, and nut.

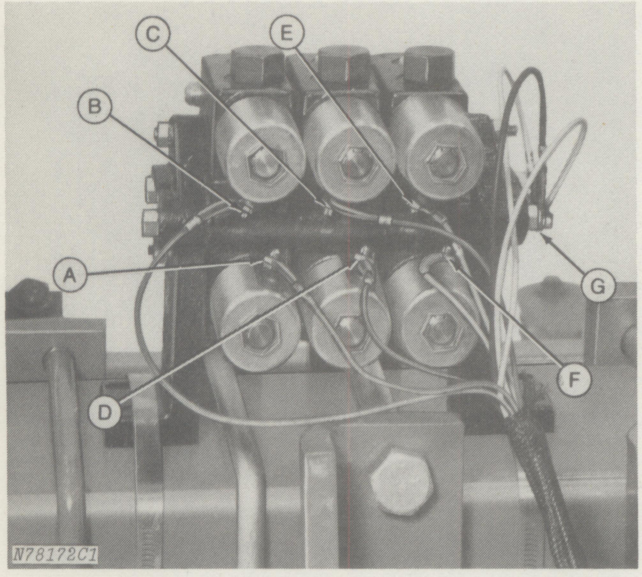
Slide rockshaft tube (B) through rockshaft arms and cylinder mounting bracket U-bolts (C). Tighten nuts on cylinder mounting bracket U-bolts.

Install outrigger rockshaft tubes in the same manner as above.

Electric Remote Control Valves



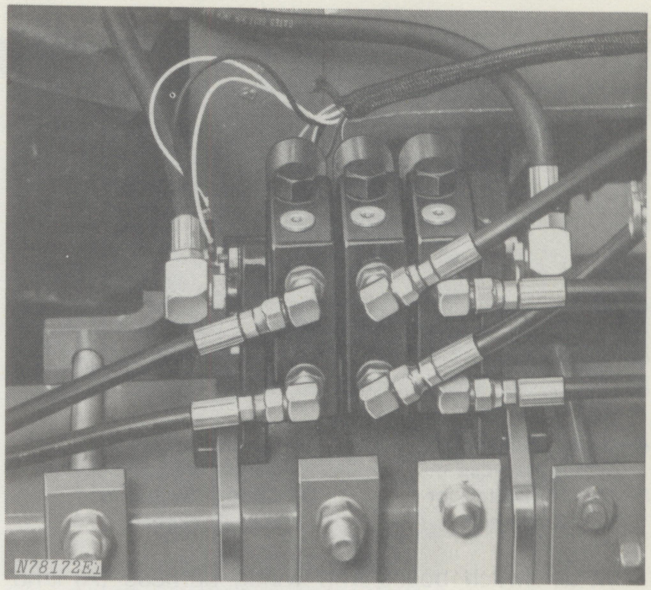
Position the electric remote control valves on center frame in the area of the left-hand hitch bracket and secure in place with hose clamps.



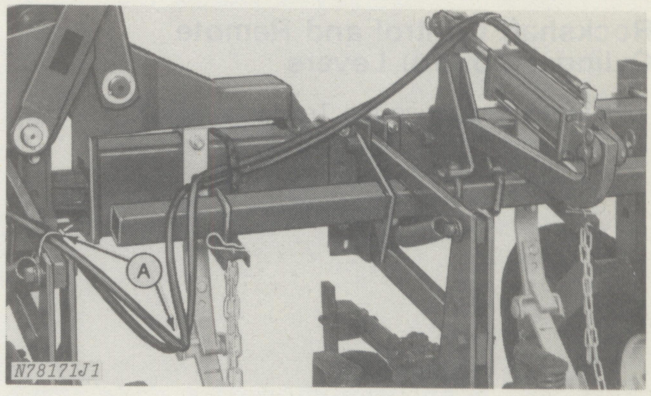
Attach the wiring harness to the electric solenoids with the color coded and numbered wires attached to the terminals as follows:

A—No. 3 - Light Blue
B—No. 7 - Tan
C—No. 4 - Brown
D—No. 2 - Dark Blue
E—No. 14 - Black with White Stripe
F—No. 12 - Blue with White Stripe
G—No. 10 - White
No. 20 - White
No. 21 - Black

Hydraulic Hoses, Fittings and Cylinders



Hydraulic Hoses and Fittings



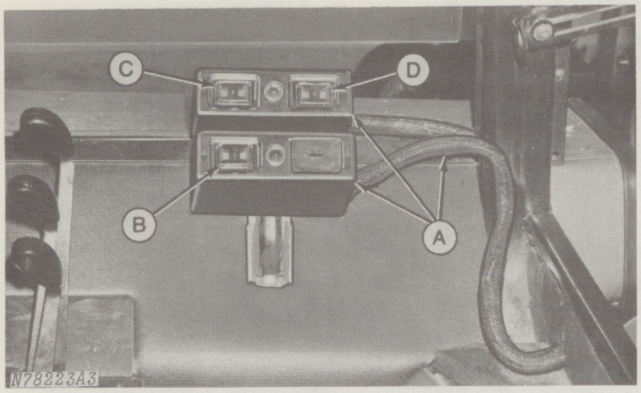
Hydraulic Cylinder and Hoses

Refer to diagrams on pages 62-63 and install hoses, fittings and cylinders.

Route hoses in hinge area as shown at (A).

IMPORTANT: To avoid damage to cylinder, install cylinder so rod points toward frame.

Control Switches



A—Switch Boxes and Wiring Harness
B—Control Switch for L.H. Rockshaft
C—Control Switch for Center Frame Rockshaft
D—Control Switch for R.H. Rockshaft

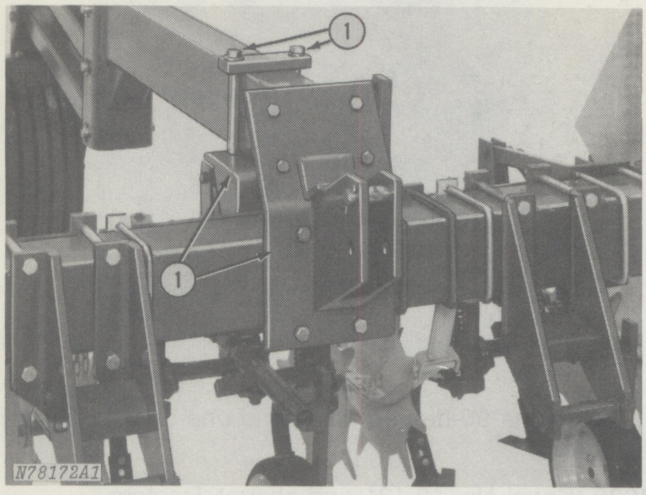
Install switch boxes and wiring harness (A) and switches (B), (C), and (D) as shown in the installation directions furnished with the bundle.

Rockshaft Control and Remote Cylinder Control Levers

Refer to "Preparing the Tractor", page 7.

LIFT ASSIST WHEEL ATTACHMENT

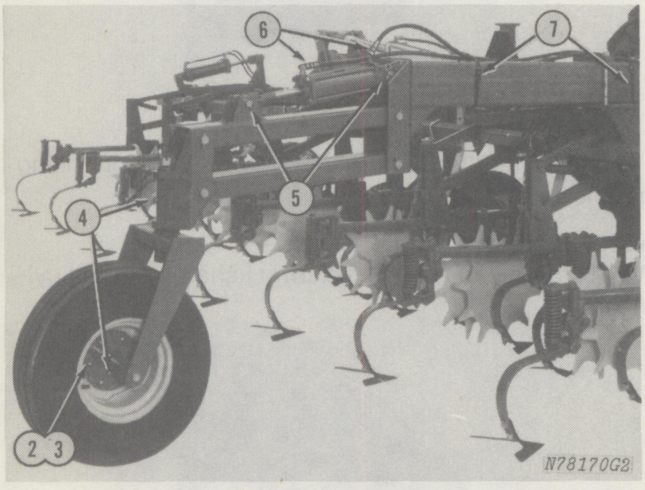
Installing Parts on Cultivator



1. Position the mast and frame assembly on the center of the cultivator frame and install with the support. Use six 3/4 x 9-1/2-inch bolts, lock washers, and nuts.

NOTE: Some row spacings require the center rig be installed at this time, see pages 47-48.

IMPORTANT: Tighten the bolts to the torque specified on page 68.



2. Remove the axle and hub assembly. Install the tire and rim with six wheel bolts on the hub.

3. Install the hub with the axle, lock washer, and nut.

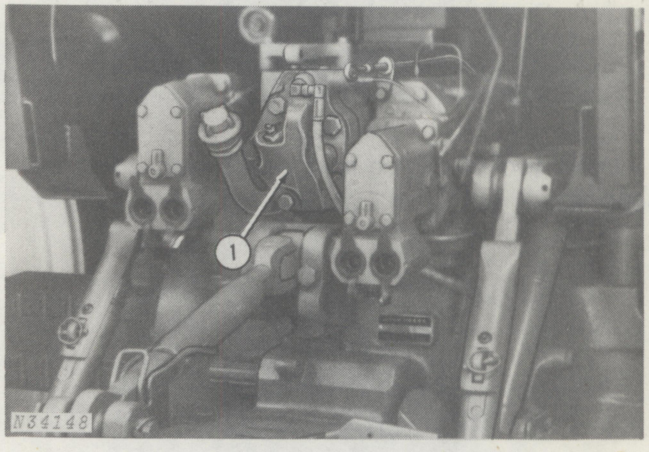
4. Lubricate the hub and yoke stem. The stem should be lubricated, then turned 180 degrees and lubricated again.

5. Install the hydraulic cylinder with two pins and four spring locking pins.

6. Install hydraulic hoses and fittings. See hose diagram, page 61.

7. Secure the hoses to the frame with tie straps.

Installing Parts on Tractor

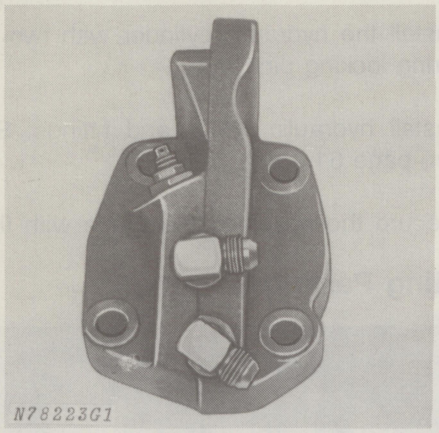


NOTE: If tractor is equipped with power-weight transfer hitch, the proper piston cover is already installed. Go to step 4.

1. Remove and store the rockshaft piston cover. Support or block up the lift links to prevent the piston from applying pressure to the cover. Small amount of oil will drain.

2. Prepare the new rockshaft piston cover as follows: (In addition to the mounting bolts, it may be necessary to transfer parts from the old cover.)

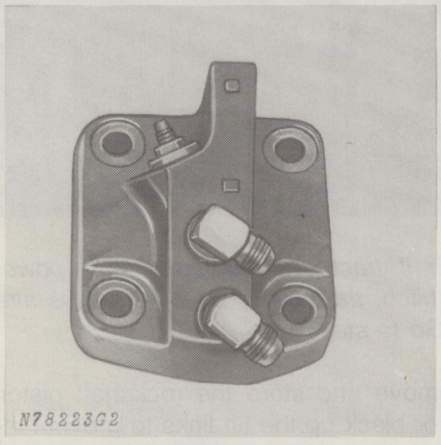
3020 (Serial No. 123,000 and above)
4000, 4020, and 4320 Tractors



R44819

Install two 90-degree fittings as shown.

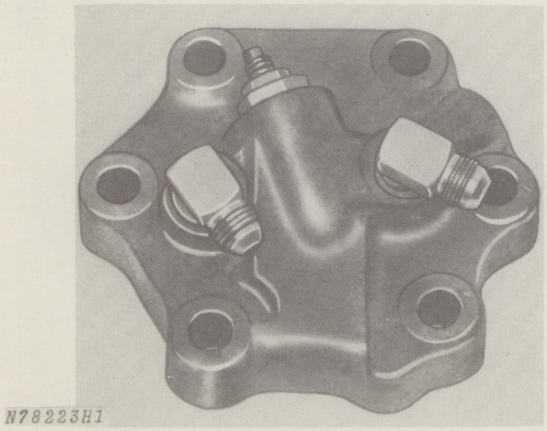
4030, 4230, and 4430 Tractors



R50536

Install two 90-degree fittings as shown.

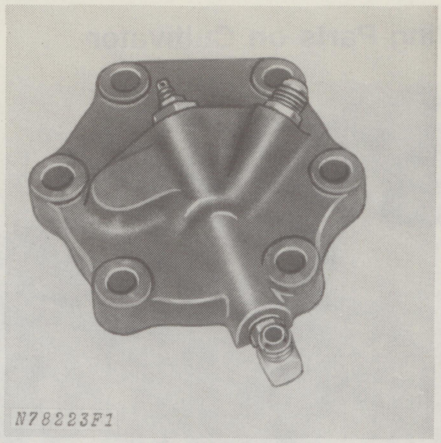
4520 and 4620 Tractors



R44820

Install two 90-degree fittings as shown.

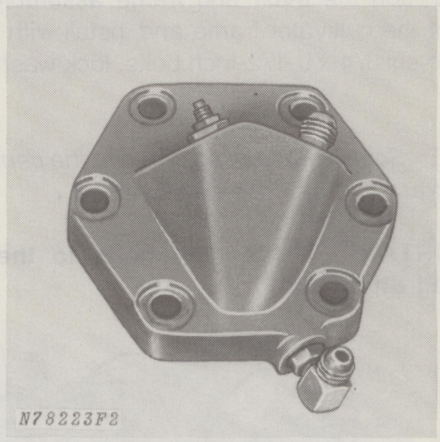
4630 (Serial No. 13,120 and below) Tractors



R50202

Install one 90-degree fitting and one straight fitting as shown.

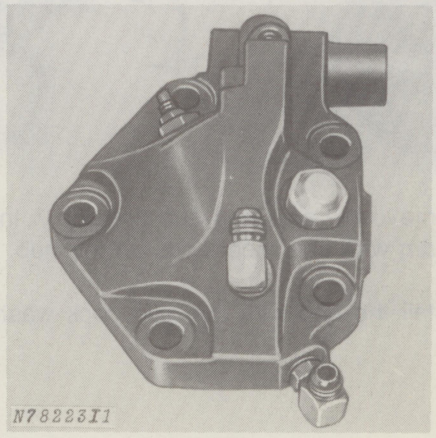
4630 (Serial No. 13,121 and above) Tractors



R58247

Install one 90 degree fitting and one straight fitting as shown.

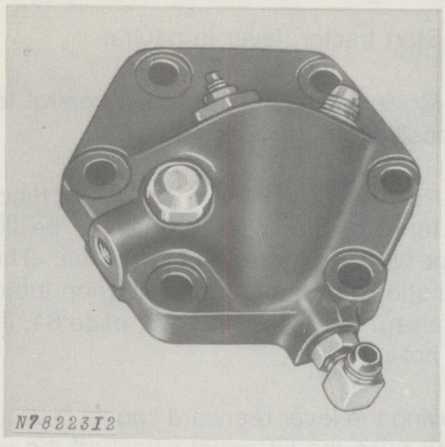
4040, 4240, and 4440 Tractors—
(WITH factory-installed tractor rockshaft lift-assist cylinder.



AR74187

Install two 90-degree fittings as shown.

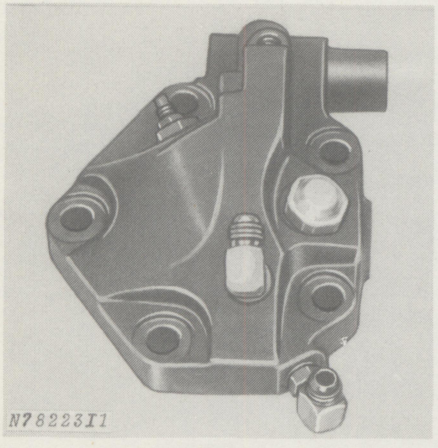
4640 and 4840 Tractors



R64459

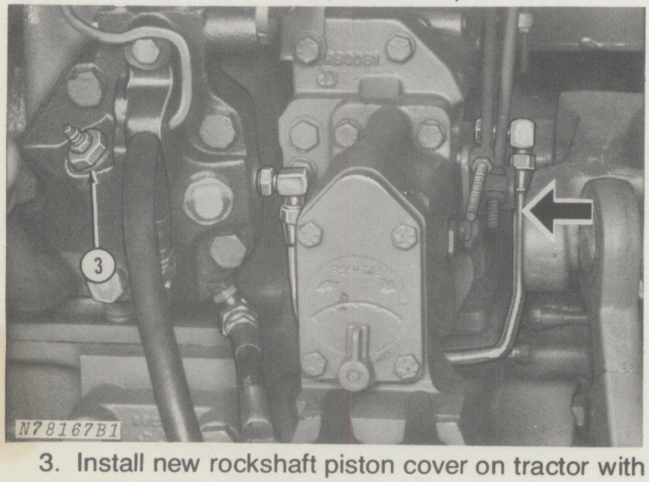
Install one 90-degree fitting and one straight fitting as shown.

4040, 4240, and 4440 Tractors
(WITHOUT factory-installed tractor rockshaft lift-assist cylinder)



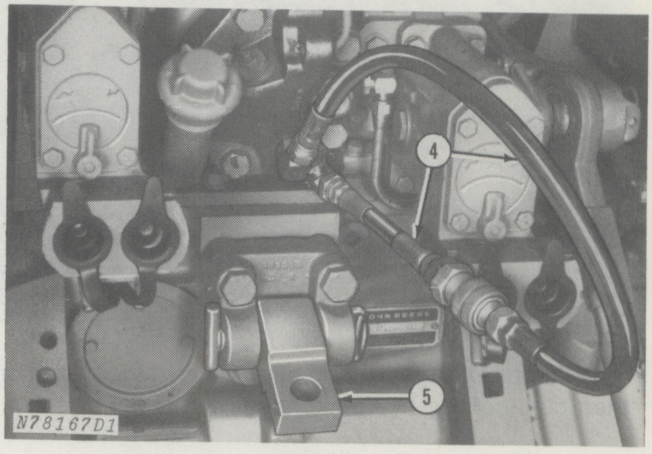
AR74187

Install two 90-degree fittings as shown, and one 90 degree fitting on the side (see below).



3. Install new rockshaft piston cover on tractor with large O-ring and small O-ring.

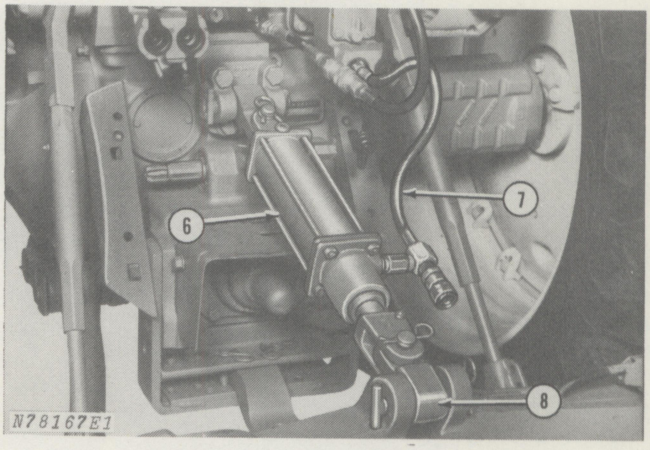
Install metal tube as shown (bold arrow) on 4040, 4240, and 4440 tractors WITHOUT factory-installed tractor rockshaft lift-assist cylinder.



4. Install short hose, and long hose, and connect the Quik-Disconnect Coupler.

5. Install front pivot link.

IMPORTANT: See step 8 to identify link.



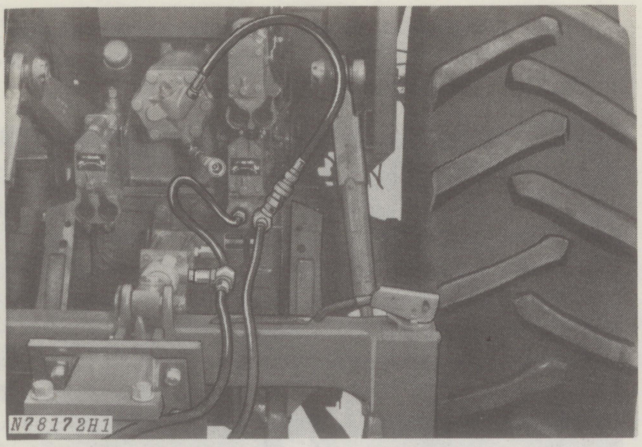
6. Install fittings in lift cylinder (see page 61). Remove clevis from cylinder rod and discard clevis. Install cylinder stroke adjustment control sleeves on cylinder rod; then install new clevis on rod.

IMPORTANT: Be sure the clevis attached to rod is the clevis received with a red tag attached.

7. Install 24-inch (609 mm) hose as shown.

8. Install cylinder rear pivot link in the hitch or Quik-Coupler as shown.

IMPORTANT: The rear pivot link has a dimension of 3 inches (76 mm) between the centerline of the two holes.



9. Refer to page 10 and attach cultivator to tractor; then connect the hydraulic hoses as shown.

10. Install a lever lock clip to hold the lever forward when transporting. See page 7.

Checking Lift-Assist Wheel Operation

1. Start tractor, lever in neutral.

2. Move the tractor rockshaft control lever to the rear position and lock it in place.

3. Push and lock the No. 2 hydraulic function control lever forward. The cultivator should be lifted by the 3-point hitch and the lift-assist wheel. The lift-assist wheel should be on the ground when the cultivator is fully raised. See hose diagram, page 61, if this action does not result.

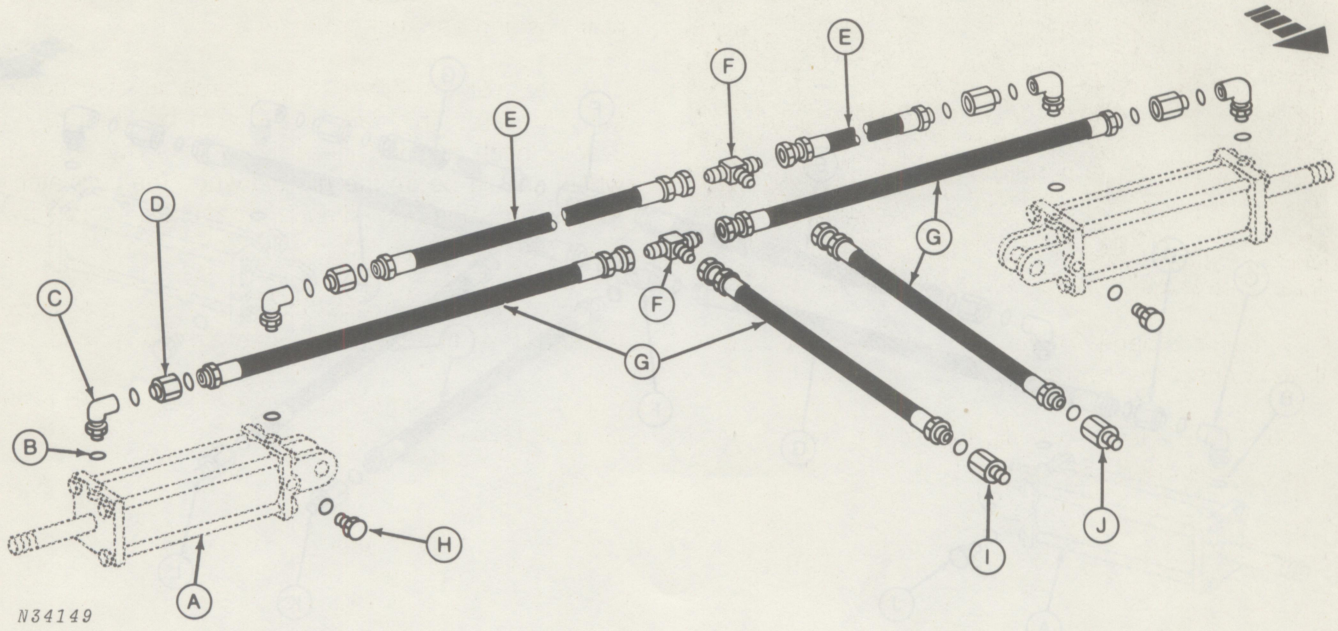
Moving the lever rearward should lower the cultivator and raise the lift assist wheel off the ground.

Fold the outriggers and check the operation of the lift-assist wheel again.

HYDRAULIC HOSE DIAGRAMS

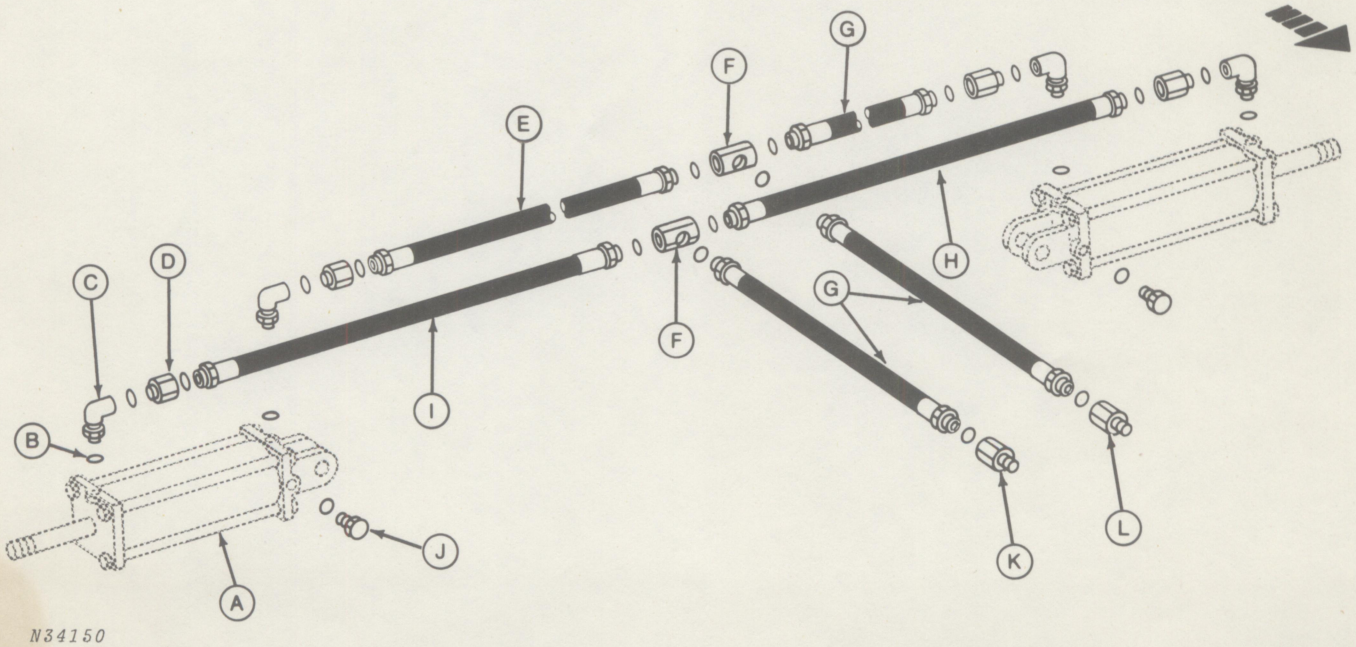
Folding Cylinders

Six-Row, 34 to 40-Inch (0.86 to 1.02 m) and Eight-Row, 28 to 32-Inch (0.71 to 0.81 m) Rows



A—Cylinder, 4 x 16-Inch (102 x 406 mm)
B—O-Ring
C—90 Degree Elbow
D—Restrictor
E—Hose, 3/8-Inch I.D. x 30-Inch (10 x 762 mm)
F—Tee
G—Hose, 3/8-Inch I.D. x 52-Inch (10 x 1 321 mm)
H—Plug
I—Plug, Breakaway with Notch
J—Plug, Breakaway

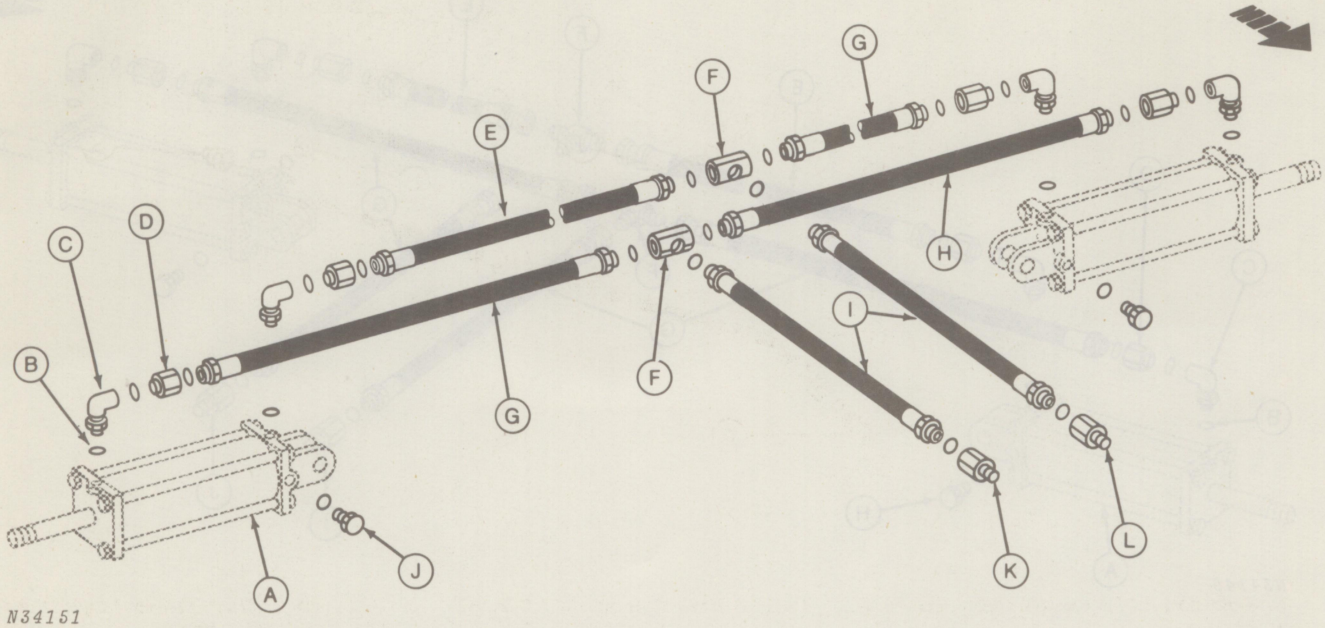
Eight-Row, 34 to 40-Inch (0.86 to 1.02 m) and Twelve-Row, 28 to 30-Inch (0.71 to 0.76 m) Rows



A—Cylinder, 4 x 16-Inch (102 x 406 mm)
B—O-Ring
C—90 Degree Elbow
D—Restrictor
E—Hose, 3/8-Inch I.D. x 30-Inch (10 mm x 762 mm)
F—Tee
G—Hose, 3/8-Inch I.D. x 52-Inch (10 mm x 1 321 mm)
H—Plug
I—Plug, Breakaway with Notch
J—Plug, Breakaway

Folding Cylinders—Continued

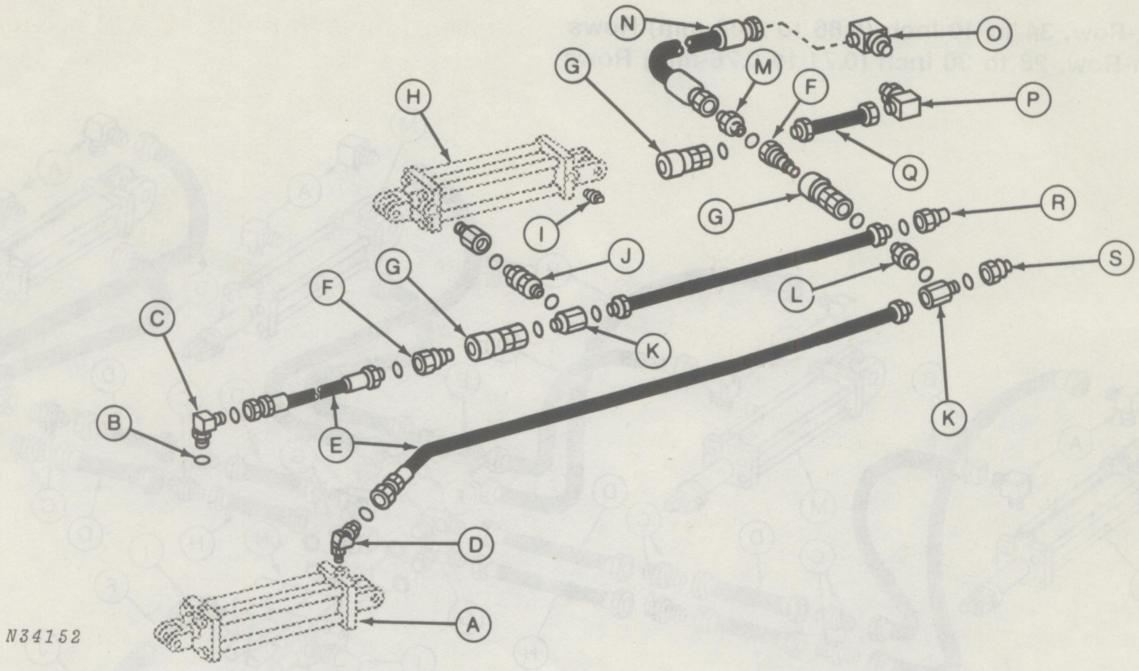
Twelve-Row, 34 to 40 Inch (0.86 to 1.02 m) and Sixteen-Row, 28 to 30 Inch (0.71 to 0.76 m) Rows



N34151

A—Cylinder, 5 x 16-Inch (127 x 406 mm)
B—O-Ring
C—90 Degree Elbow
D—Restrictor
E—Hose, 3/8-Inch I.D. x 79-Inch (10 x 2 007 mm)
F—Tee
G—Hose, 3/8-Inch I.D. x 95-Inch (10 x 2 413 mm)
H—Hose, 3/8-Inch I.D. x 116-Inch (10 x 2 946 mm)
I —Hose, 3/8-Inch I.D. x 60-Inch (10 x 1 524 mm)
J—Plug
K—Plug, Breakaway with Notch
L—Plug, Breakaway

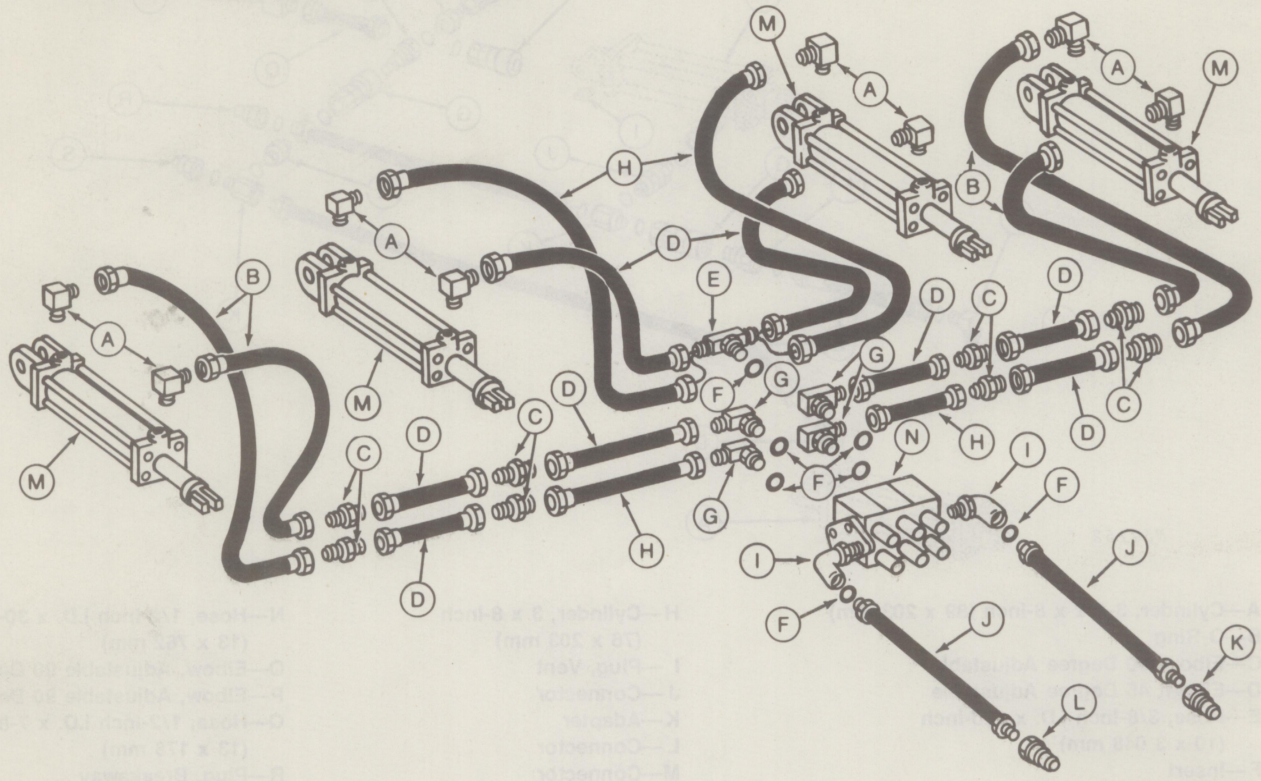
Lift-Assist Wheel-Attachment



A—Cylinder, 3-1/2 x 8-Inch (89 x 203 mm)
B—O-Ring
C—Elbow, 90 Degree Adjustable
D—Elbow, 45 Degree Adjustable
E—Hose, 3/8-Inch I.D. x 120-Inch (10 x 3 048 mm)
F—Insert
G—Coupler
H—Cylinder, 3 x 8-Inch (76 x 203 mm)
I —Plug, Vent
J —Connector
K—Adapter
L —Connector
M—Connector
N—Hose, 1/2-Inch I.D. x 30-Inch (13 x 762 mm)
O—Elbow, Adjustable 90 Degree
P—Elbow, Adjustable 90 Degree
Q—Hose, 1/2-Inch I.D. x 7-Inch (13 x 178 mm)
R—Plug, Breakaway
S—Plug, Breakaway with Notch

Split Rockshaft Lift-Attachment

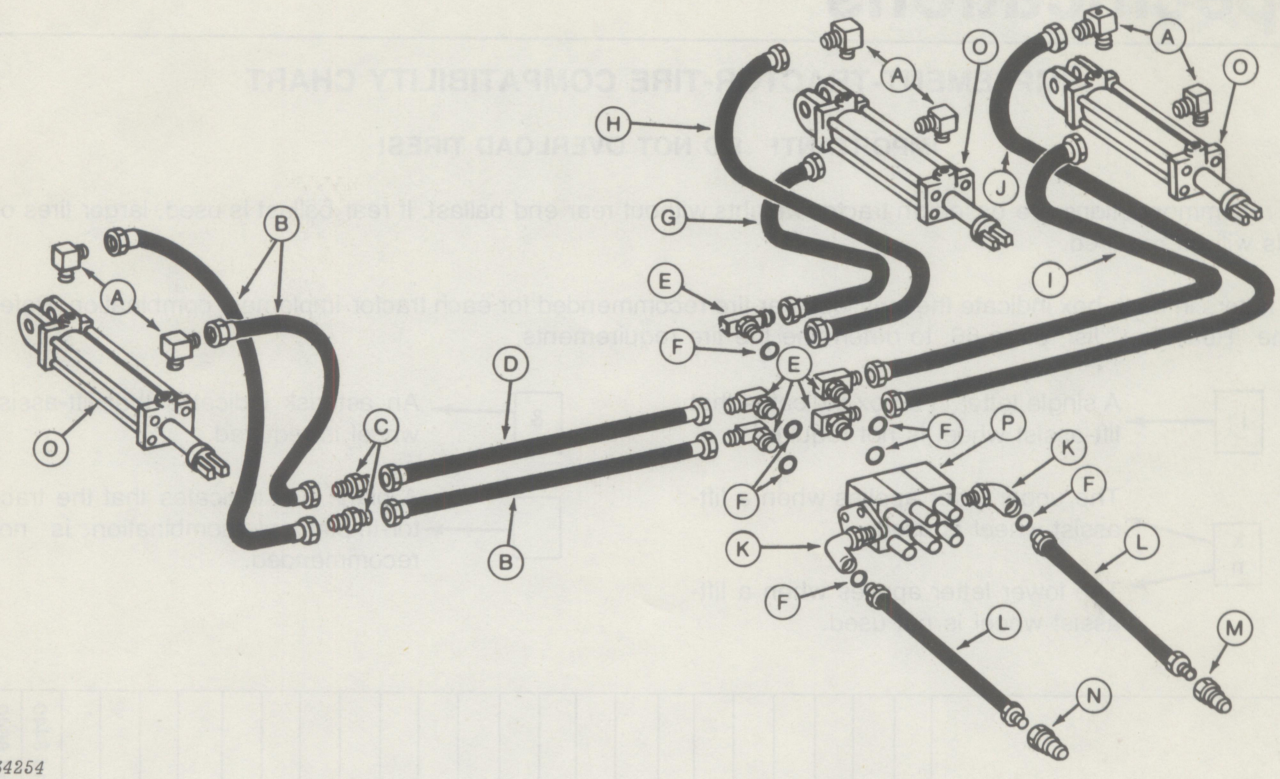
Twelve-Row, 34 to 40 Inch (0.86 to 1.02 mm) Rows
Sixteen-Row, 28 to 30 Inch (0.71 to 0.76 mm) Rows



N34253

A—Elbow, 90 Degree
B—Hose, 1/4-Inch I.D. x 47-Inch (6.35 x 1 194 mm)
C—Connector
D—Hose, 1/4-Inch I.D. x 92-Inch (6.35 x 2 337 mm)
E—Tee
F—O-Ring
G—Elbow, 90 Degree
H—Hose, 1/4-Inch I.D. x 102-Inch (6.35 x 2 591 mm)
I —Elbow, 90 Degree
J —Hose, 3/8-Inch I.D. x 60-Inch (9.52 x 1 524 mm)
K—Plug, Breakaway
L —Plug, Breakaway, with Groove
M—Cylinder 3 x 8-Inch (76 x 203 mm)
N—Hydraulic Control Valves

Eight-Row, 34 to 40-Inch (0.86 to 1.02 mm) Rows
Twelve-Row, 28 to 30-Inch (0.71 to 0.76 mm) Rows



N34254

A—Elbow, 90 Degree
B—Hose, 1/4-Inch I.D. x 92-Inch (6.35 x 2 337 mm)
C—Connector
D—Hose, 1/4-Inch I.D. x 104-Inch (6.35 x 2 591 mm)
E—Elbow, 90 Degree
F—O-Ring
G—Hose, 1/4-Inch I.D. x 47-Inch (6.35 x 1 194 mm)
H—Hose, 1/4-Inch I.D. x 56-Inch (6.35 x 1 423 mm)
I —Hose, 1/4-Inch I.D. x 169-Inch (6.35 x 4 293 mm)
J —Hose, 1/4-Inch I.D. x 179-Inch (6.35 x 4 549 mm)
K—Elbow, 90 Degree
L —Hose, 3/8-Inch I.D. x 60-Inch (9.52 x 1 524 mm)
M—Plug, Breakaway
N—Plug, Breakaway, with Groove
O—Cylinder, 3 x 8-Inch (76 x 203 mm)
P—Hydraulic Control Valves

Specifications

IMPLEMENT-TRACTOR-TIRE COMPATIBILITY CHART

IMPORTANT! DO NOT OVERLOAD TIRES!

Tire recommendations are based on tractor weights without rear end ballast. If rear ballast is used, larger tires or duals will be required.

The letters in each box indicate the smallest rear tire recommended for each tractor-implement combination. Refer to the "Rear Tire" list, page 66, to determine the tire requirements.

A single letter in a box indicates that lift-assist wheel is not required.

The upper letter applies when a lift-assist wheel is used.

The lower letter applies when a lift-assist wheel is not used.

An asterisk indicates that lift-assist wheel is required.

A blank box indicates that the tractor-implement combination is not recommended.

Tractor Models		2840	3020	4030	4040		4000	4020	4230	4240		4320	4430	4440		4520	4620	4630	4640	4840		5020	6030	8430 and 8440	8630 and 8640
Six-Row Sweep		i		e	i			g	i	k		f	k	l		r	r	r	r	r		v	r	n	n
36 to 40-inch rows	w/frame																								
(0.91 to 1.02 m)	gauge wheels	i		g	j			g	i	k		g	k	l		r	r	r	r	r		v	r	n	n
Six-Row S-Tine		i	c	d	g		c	g	g	h		d	g	i		r	r	m	r	r		v	m	k	k
34 to 40-inch rows	w/frame																								
(0.86 to 1.02 m)	gauge wheels	i	c	d	g		c	g	g	h		d	h	i		r	r	m	r	r		v	r	k	k
Six-Row, Single-Rig, Five-Shank, Sweep		i		e	h		c	g	h	i		f	i	k		r	r	r	r	r		v	r	k	k
36 to 40-inch rows	w/frame																								
(0.91 to 1.02 m)	gauge wheels	i		e	h		c	g	h	i		f	i	k		r	r	r	r	r		v	r	k	n
Eight-Row Sweep		i	d	e	h		c	g	h	i		f	i	l		r	r	r	r	r		v	r	A	A
28 to 30-inch rows	w/frame																								
(0.71 to 0.76 m)	gauge wheels	i	q	e	i		x	g	i	i		f	i	l		r	r	r	r	r		v	r	A	A
Eight-Row B & B		i	q	e	h		x	g	i	i		f	i	l		r	r	r	r	r		v	r	A	A
28 to 30-inch rows	w/frame																								
(0.71 to 0.76 m)	gauge wheels	i	q	e	i		x	g	i	k		f	i	l		r	r	r	r	r		v	r	A	A
Eight-Row S-Tine		i	d	e	h		c	g	h	i		f	i	l		r	r	r	r	r		v	r	A	A
28 to 32-inch rows	w/frame																								
(0.71 to 0.81 m)	gauge wheels	i	q	e	i		x	g	i	i		f	i	l		r	r	r	r	r		v	r	A	A
Eight-Row Sweep				e *	i *			g *	i *	k s		f l	k n	l p		r r	r r	r v	r v	r r		v v	r v	s	s
36 to 40-inch rows	w/split rock-																								
(0.91 to 1.02 m)	shaft lift			g *	k *			g *	k *	l s		g m	l p	l s		r r	r r	r v	r v	r w		v v	r w	s	s

Tractor Models	2840	3020	4030	4040	4000	4020	4230	4240	4320	4430	4440	4520	4620	4630	4640	4840	5020	6030	8430 and 8440	8630 and 8640
Eight-Row S-Tine	i	c	d	g	c	g	g	h	d	g	i	r	r	m	r	r	v	m		
		*	*	*	*	*	*	m	i	m	m	r	r	r	r	r	v	r	n	n
34 to 40-inch rows w/split rock-	l	d	e	g	c	g	h	i	f	i	i	r	r	m	r	r	v	r		
(0.86 to 1.02 m) shaft lift		*	*	*	*	*	*	n	i	m	n	r	r	r	r	v	v	r	n	n
Eight-Row, Single-Rig, Five Shank Sweep	l	d	e	h	c	g	h	i	f	i	i	r	r	m	r	r	v	r		
		*	*	*	*	*	*	n	k	n	n	r	r	v	r	v	v	v	n	n
36 to 40-inch rows w/split rock-			e	i		g	i	j	f	i	k	r	r	r	r	r	v	r		
(0.91 to 1.02 m) shaft lift			*	*		*	*	n	l	n	p	r	r	v	r	v	v	v	s	s
Twelve-Row Sweep		q	e	i	x	g	i	l	f	l	l	r	r	r	r	r				
	l	*	*	x	*	*	*	x	l	x	x	r	r	w	r	r	w	w	A	A
28 to 30-inch rows w/split rock-		q	q	l	x	g	k	l	g	l	l	r	r	r	r	r				
(0.71 to 0.76 m) shaft lift		*	*	*	*	*	*	x	m	x	x	r	r	w	w	w	w	w	A	A
Twelve-Row Beet and Bean		q	e	i	x	g	i	l	f	l	l	r	r	r	r	r				
		*	*	*	*	*	*	x	l	x	x	r	r	w	r	r	w	w	A	A
28 to 30-inch rows w/split rock-		q	g	l	x	g	l	l	g	l	l	r	r	r	r	r				
(0.71 to 0.76 m) shaft lift		*	*	*	*	*	*	x	m	x	x	r	r	w	w	w	w	w	A	A
Twelve-Row S-Tine	l	q	e	i	x	g	i	l	f	l	l	r	r	r	r	r				
		*	*	x	*	*	x	x	l	x	x	r	r	w	r	r	w	w	A	A
28 to 30-inch rows w/split rock-		q	g	l	x	g	l	l	g	l	l	r	r	r	r	r				
(0.71 to 0.76 m) shaft lift		*	*	*	*	*	x	x	m	x	x	r	r	w	w	r	w	w	A	A
Twelve-Row Sweep										m	n	r	r	r	r	r				
										*	*	*	*	y	y	y			y	y
34 to 40-inch rows w/split rock-										n	p	r	r	v	r	r				
(0.86 to 1.02 m) shaft lift										*	*	*	*	*	y	*			y	y
Twelve-Row S-Tine										k	l	r	r	r	r	r				
										*	s	*	*	v	w	w	v	v	s	s
34 to 40-inch rows w/split rock-										l	m	r	r	r	r	r				
(0.86 to 1.02 m) shaft lift										*	s	*	*	w	w	w	w	w	s	s
Twelve-Row Single-Rig Five Shank Sweep										l	m	r	r	r	r	r				
										*	s	*	*	w	w	w			s	s
36 to 40-inch rows w/split rock-										m	n	r	r	r	r	r				
(0.91 to 1.02 m) shaft lift										*	*	*	*	y	w	y			y	y
Sixteen-Row Sweep										l	m	r	r	r	r	r				
										*	x	*	*	w	w	G			A	A
28 to 30-inch rows w/split rock-										m	x	r	r	r	r	v				
(0.71 to 0.76 m) shaft lift										*	x	*	*	G	w	G			A	A
Sixteen-Row Beet and Bean										m	m	r	r	r	r	r				
										*	x	*	*	w	w	G			A	A
28 to 30-inch rows w/split rock-										m	x	r	r	r	r	v				
(0.71 to 0.76 m) shaft lift										*	x	*	*	G	w	G			A	A
Sixteen-Row S-Tine										l	m	r	r	r	r	r				
										*	x	*	*	w	w	G			A	A
28 to 30-inch rows w/split rock-										m	x	r	r	r	r	v				
(0.71 to 0.76 m) shaft lift										*	x	*	*	G	w	G			A	A

TRACTOR REAR TIRES

(Rear tires are listed in order of increasing load carrying capacity)

	TIRE	PLY	SINGLE/ DUAL
a.	13.6-38	6	S
b.	15.5-38	6	S
c.	16.9-34	6	S
d.	15.5-38	8	S
e.	18.4-30	6	S
f.	15.5-38	10	S
g.	18.4-34	6	S
h.	16.9-34	8	S
i.	16.9-38	8	S
j.	18.4-38	6	S
k.	20.8-34	6	S
l.	18.4-34	8	S
m.	18.4-38	8	S
n.	20.8-34	8	S
o.	12.4-42	6	D
p.	20.8-38	8	S
q.	13.6-38	6	D
r.	18.4-38	10	S
s.	23.1-30	8	S
t.	23.1-34	8	S
u.	18.4-42	10	S
v.	20.8-38	10	S
w.	18.4-38	12	S
x.	15.5-38	8	D
	15.5-38	6	
y.	24.5-32	10	S
z.	30.5-32	10	S
A.	18.4-34	6	D
B.	16.9-34	8	D
C.	16.9-38	8	D
D.	18.4-38	6	D
E.	20.8-34	6	D
F.	18.4-34	8	D
G.	18.4-38	8	D
H.	23.1-30	8	D
	18.4-34	6	
I.	18.4-38	10	D
	18.4-38	6	
J.	20.8-34	8	D
K.	18.4-38	10	D
	18.4-38	8	
L.	20.8-38	8	D
M.	24.5-32	10	D
	18.4-38	6	
N.	23.1-30	8	D
O.	20.8-38	10	D
	20.8-38	8	
P.	24.5-32	10	D
	18.4-38	8	
Q.	18.4-42	10	D
R.	20.8-38	10	D

WEIGHTS

Model	Weight - lbs. (kg)
6-Row Sweep, 36-40 Inch (0.91-1.02 m)	3202 (1 454)
6-Row S-Tine, 34-40 Inch (0.86-1.02 m)	2337 (1 061)
6-Row Single Rig, 36-40 Inch (0.91-1.02 m)	2819 (1 280)
8-Row Sweep, 28-30 Inch (0.71-0.76 m)	2822 (1 281)
8-Row B & B, 28-30 Inch (0.71-0.76 m)	2887 (1 311)
8-Row S-Tine, 28-32 Inch (0.71-0.81 m)	2621 (1 190)
8-Row Sweep, 36-40 Inch (0.91-1.02 m)	4340 (1 970)
8-Row S-Tine, 34-40 Inch (0.86-1.02 m)	3210 (1 457)
8-Row Single Rig, 36-40 Inch (0.91-1.02 m)	3803 (1 727)
12-Row Sweep, 28-30 Inch (0.71 - 0.76 m)	4095 (1 859)
12-Row B & B, 28-30 Inch (0.71-0.76 m)	4184 (1 890)
12-Row S-Tine, 28-30 Inch (0.71-0.76 m)	3879 (1 761)
12-Row Sweep, 36-40 Inch (0.91-1.02 m)	6136 (2 786)
12-Row S-Tine, 34-40 Inch (0.86-1.02 m)	4686 (2 127)
12-Row Single Rig, 36-40 Inch (0.91-1.02 m)	5206 (2 364)
16-Row Sweep, 28-30 Inch (0.71-0.76 m)	5305 (2 408)
16-Row B & B, 28-30 Inch (0.71-0.76 m)	5368 (2 437)
16-Row S-Tine, 28-30 Inch (0.71-0.76 m)	5268 (2 392)

NOTE: The above weights are for base machine. Add weight for attachments as follows:

Gauge Wheels	92 lbs. (42) each Wheel
Coulters	94 lbs. (43) each Coulter
Rolling Shields	31 lbs. (14) each Pair
Rig-Mounted Shields	23 lbs. (10) each Pair

Split Rockshaft Lift	
8-Row, 34-40 Inch	349 lbs. (158)
12-Row, 20-30 Inch	378 lbs. (172)
12-Row, 34-40 Inch	504 lbs. (229)
16-Row, 28-30 Inch	504 lbs. (229)
Lift-Assist Wheel	530 lbs. (241)

DIMENSIONS

Model	Center Frame Size	Outrigger Frame Size	Operating Width	Transport Width
6-Row, 34-40 Inch (0.86-1.02 m) 6-Row, 28-32 Inch (0.71-0.81 m)	5 x 7 x 137-Inch (127 x 177 x 3 480 mm)	5 x 7 x 62-Inch (127 x 177 x 1 575 mm)	21-Feet (6 401 mm)	11-Feet 9-Inch (3 581 mm)
8-Row, 34-40 Inch (0.86-1.02 m)	7 x 7 x 188-Inch (177 x 177 x 4 775 mm)	5 x 7 x 71-Inch (127 x 177 x 1 803 mm)	28-Feet (8 534 mm)	16-Feet (4 877 mm)
12-Row, 28-30 Inch (0.71-0.76 m)	7 x 7 x 188-Inch (177 x 177 x 4 775 mm)	5 x 7 x 93-Inch (127 x 177 x 2 362 mm)	31-Feet (9 449 mm)	16-Feet (4 877 mm)
12-Row, 34-40 Inch (0.86-1.02 m)	7 x 7 x 250-Inch (177 x 177 x 6 350 mm)	5 x 7 x 122-Inch (127 x 177 x 3 099 mm)	41-Feet (12 497 mm)	21-Feet 2-Inch (6 452 mm)

RIG GAUGE WHEELS

Rig gauge wheels are standard equipment for all models of cultivators.

FRAME GAUGE WHEELS

Two frame gauge wheels are standard equipment on 28-, 31-, and 41-foot (8 534, 9 449, 12 497 mm) frame models; two additional frame gauge wheels for the main frame are optional. Four frame gauge wheels are required for additional stability when operating the 28-, 31-, and 41-foot (8 534, 9 449, and 12 497 mm) models with lift-assist wheel.

Two frame gauge wheels are optional on the 21-foot (6 401 mm) frame.

COULTERS

Two 18-inch stabilizing coulters are standard equipment on 21-, 28-, and 31-foot (6 401, 8 534, and 9 449 mm) frame models, except S-Tine cultivators.

Four 18-inch stabilizing coulters are furnished with the 41-foot (12 497 mm) frame.

RIG EQUIPMENT OPTIONS

Quick-Return Spring-Trip Shanks
Quick-Adjustable Spring-Trip Shanks
S-Tine Shanks
Beet and Bean Bars and Clamps

ATTACHMENTS

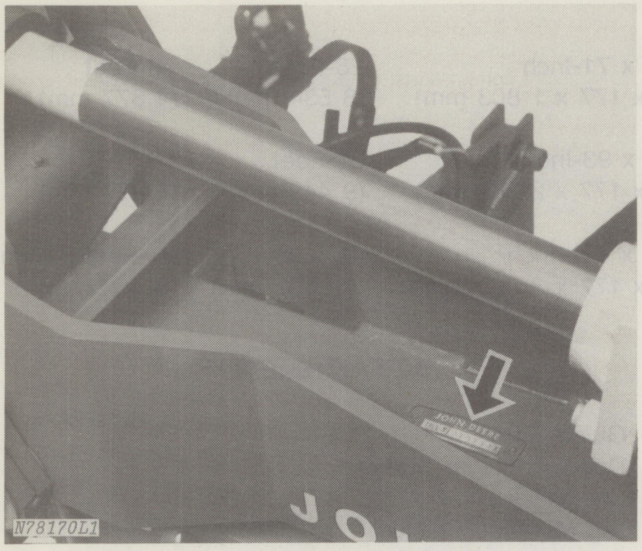
Guide Rod
Down Pressure Springs
Disk Hiller
Rig Mounted Shields
Shield Arm Extensions
Rolling Shields
Rolling Shield Stops
Hooded Shields
Plant Shield Offset Bracket
Clod Breaker
Beet and Bean Rotary Hoe Attachment
Rotary Hoe Attachment
Sweep Filler Block (For use with Quick-Return Spring-Trip Shanks)
Split Rockshaft Lift
Down Pressure Arms (For Split Rockshaft Lift)
Lift-Assist Wheel
Sweeps and Shovels
Beet and Bean Shanks and Standards
Beet and Bean Bed Knives, Weeding Knives, and Sweeps
Disk Weeders-9 and 11-inch (229 and 279 mm)

SAFETY EQUIPMENT

SMV emblem and reflectors for main frame are standard equipment.

SERIAL NUMBER

When ordering parts or reporting any other information regarding your cultivator, always provide the cultivator model and serial number as given on the serial number plate. By doing so, you will assist your John Deere dealer in giving you prompt, efficient service.



The serial number is located on the left-hand end of the center frame. Record it below.

Serial Number _____

Date Purchased _____, 19____

TORQUE VALUE CHART

Recommended Torque Value in Foot-Pounds (Nm [kgm])
Coarse and Fine Threads

Bolt Diameter	Three Radial Dashes	Six Radial Dashes
1/4	10 (14 [1.4])	14 (19 [1.9])
5/16	20 (27 [2.8])	30 (41 [4.1])
3/8	35 (47 [4.8])	50 (68 [6.9])
7/16	55 (75 [7.6])	80 (101 [11])
1/2	85 (115 [12])	130 (163 [17])
9/16	130 (176 [18])	185 (237 [24])
5/8	170 (230 [23])	250 (325 [33])
3/4	300 (407 [41])	420 (576 [59])
7/8	445 (603 [61])	670 (928 [95])
1	670 (908 [92])	1000 (1396 [142])

(Specifications and design subject to change without notice)

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Title	Order No.	Qty.	Price Each
Parts Catalog 85 Series Folding Row-Crop Cultivator	PC-1709		$3.00
Operator's Manual 85 Series Folding Row-Crop Cultivator	OM-N159483		$2.25

NOTE: If you want manuals or catalogs for equipment not shown on this list, list the model number, serial number and name of the equipment below.

CUT HERE

FMO Manual - Tractors	FMO-101B		$ 8.95
FMO Manual - Tillage	FMO-111B		8.95
FMO Manual - Planting	FMO-121B		6.95
FMO Manual - Crop Chemicals	FMO-131B		7.95
FMO Manual - Hay & Forage Harvesting	FMO-141B		8.95
FMO Manual - Combine Harvesting	FMO-151B		6.95
FMO Manual - Preventive Maintenance	FMO-161B		7.95
FMO Manual - Machinery Management	FMO-171B		6.95
FMO Manual - Machine Safety	FMO-181B		7.95
FMO Set of 9 Manuals above	FMO-394 Set		61.95
FOS Manual- Hydraulics	FOS-10B		5.95
FOS Manual - Electrical Systems	FOS-20B		6.95
FOS Manual - Engines	FOS-30B		7.95
FOS Manual - Power Trains	FOS-40B		5.95
FOUR FOS MANUALS (above)	FOS-90 Set		24.95
FOS Manual - Shop Tools	FOS-51B		2.95
FOS Manual - Welding	FOS-52B		4.95
FOS Manual - Belts and Chains	FOS-53B		2.95
FOS Manual - Bearings and Seals	FOS-54B		3.95
FOS Manual - Tires and Tracks	FOS-55B		3.95
FOS Manual - Mowing and Spraying Equipment	FOS-56B		2.95
FOS Manual - Air Conditioning	FOS-57B		4.95
FOS Manual - Fuels, Lubricants and Coolants	FOS-58B		3.95
FOS Manual - Fiber Glass	FOS-59B		2.95
FOS Manual - Fasteners	FOS-60B		3.95
SET OF TEN FOS MANUALS FOS-51B, 52B, 53B, 54B, 55B, 56B, 57B, 58B, 59B and 60B	FOS-70 Set		31.95
SET OF ALL FOURTEEN FOS MANUALS	FOS-180 Set		55.95

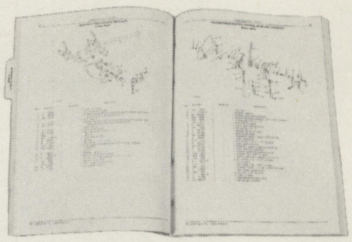
Illinois State Residents add 5% for ROT. . . . . _____

Check or money order in U.S. dollars enclosed . . . . . .Total _____
(Do not send cash or stamps)

Prices subject to change without notice.

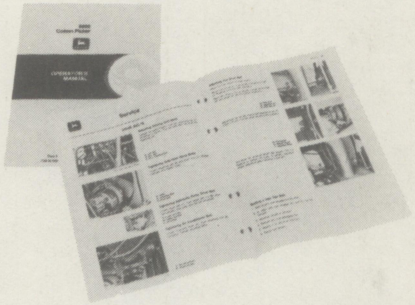
SP-320 Litho in U.S.A. MAR-78

PARTS CATALOG



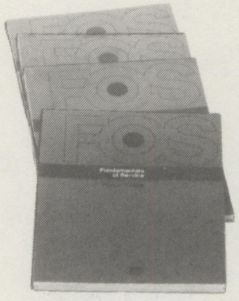
A parts catalog containing exploded view illustrations and lists of all parts is useful when purchasing service parts. Helps identify the correct parts. Useful in assembling and disassembling.

OPERATOR'S MANUAL



An extra copy of the operator's manual may be important if the copy furnished with your machine is misplaced.

FMO AND FOS MANUALS



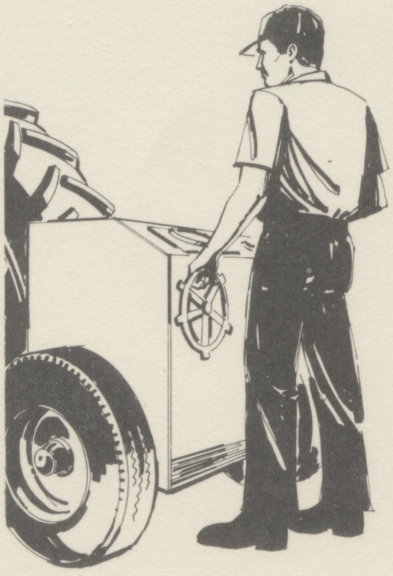
These are basic manuals covering most all types and makes of agricultural machinery. FMO manuals tell you how to *operate* machines; FOS manuals tell you how to *service* machines. Each manual starts with basic theory and is fully illustrated with colorful diagrams and photographs. Both the "whys" and "hows" of adjustments and repairs are covered in this reference library.

Service to keep you on the job

We, at your John Deere dealer's, pride ourselves in having what it takes to help keep you on the job . . .

John Deere Parts.
We help minimize downtime by putting the right parts in your hands in a hurry. That's why we maintain a large and varied inventory—to stay a jump ahead of your needs.

The right tools.
Precision tools and testing equipment enable our Service Department to locate and correct troubles quickly . . . to save you time and money.



Well-trained technicians.
School is never out for John Deere service technicians. Training schools are held regularly to be sure our personnel know your equipment and how to maintain it. Result? Experience you can count on!

Prompt service.
Our goal is to provide prompt, efficient care when you want it and where you want it. We can make repairs at your place or at ours, depending on the circumstances. See us. Depend on us.

John Deere Service Superiority: We'll be around when you need us